CALIFORNIA
FIRE WEATHER
ANNUAL OPERATING PLAN

2003

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California Fire Weather Annual Operating Plan - 2003

I. INTRODUCTION

This document serves as the California Fire Weather Annual Operating Plan (AOP) for the National Weather Service (NWS) and the interagency fire management community operating under the California Wildfire Coordinating Group (CWCG). The general relationship between the NWS and the interagency fire management community is set forth in the following documents:

- Interagency Agreement for Meteorological Services (National MOA or National Agreement)
- Interagency Agreement Between the California Wildfire Coordinating Group and the National Weather Service
- National Weather Service NWSI 10-4: Fire Weather Services
- 2003 California and National Mobilization Guides

The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in California.

II. SIGNIFICANT CHANGES SINCE LAST YEAR

A. The Interagency Fire Forecast/Warning Units (IFFWUs) are now known as interagency Fire Weather Centers (FWCs).

B. Transition of Fire Weather duties completed.
   1. All planning/pre-suppression forecasts, NFDRS zone trend forecasts, Fire Weather Watches/Red Flag Warnings, and wildfire spot forecasts done by NWS.
   2. FWCs at Redding, CA and Riverside, CA will provide Predictive Services support to the Northern California Area and Southern California Area, respectively. FWCs will no longer issue Fire Weather Watches or Red Flag Warnings.
   3. Prescribed burns with smoke management concerns may be supported by the FWCs as well as by the NWS.

C. Requests for spot forecasts made through Internet-based programs.

D. Changes made to fire weather zone numbering and boundaries.

E. Adjustment to Red Flag warning criteria (see individual NWS stations, Section IV. D.).

F. ATMUs will no longer be on a pre-order with an IMET.

G. New NFDRS zones in Southern California.

H. New Incident Meteorologists (IMETs) at NWS Reno and San Diego.

III. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

A. Fire weather services are provided by the NWS Weather Forecast Offices (WFOs) listed below and by the FWCs in Redding and Riverside. Contact information follows:

Eureka, CA	Phoenix, AZ
Las Vegas, NV	Reno, NV
Los Angeles/Oxnard, CA	Sacramento, CA
Medford, OR	San Diego, CA
San Francisco Bay Area/Monterey, CA	San Joaquin Valley/Hanford, CA

NORTHERN CALIFORNIA FWC/ PREDICTIVE SERVICES UNIT
6101 Airport Road, Redding, CA 96002-9423
Web Site Address: http://www.fs.fed.us/r5/fire/north/fwx
Office E-mail: redding.fwx@fire.ca.gov
Office Hours: late March to mid November: 7am – 5pm daily; rest of year: 7am – 5pm M-F

Name	Position	E-Mail
Chris Fontana	FWC Team Leader	cfontana@fs.fed.us
Mike Lococo	Fire Intelligence Officer	mlococo@fs.fed.us
John Snook	GACC Meteorologist	jsnook@fs.fed.us
Brenda Graham	GACC Meteorologist	blgraham@fs.fed.us
Steve Leach	GACC Meteorologist	sleach@ca.blm.gov

SOUTHERN CALIFORNIA FWC/ PREDICTIVE SERVICES UNIT
2524 Mulberry Street, Riverside, CA 92501-2200
Web Site Address: http://www.fs.fed.us/r5/fire/south/fwx
Office E-mail: riverside.fwx@fire.ca.gov
Office Hours: Fire Season: 7am–5pm daily. Non-Fire Season: 7am – 5pm M-F

Name	Position	E-Mail
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Harold Coffer	GACC Meteorologist	hcoffer@fs.fed.us
Matt Shameson	GACC Meteorologist	mshameson@fs.fed.us
Vanessa Burnett	Fire Intelligence Officer	vburnett@fs.fed.us
Bruce Risher	Logistics Coordinator	bruce.risher@fire.ca.gov

EUREKA NWS WEATHER FORECAST OFFICE
300 Startare Drive, Eureka, CA 95501-6000
Web Site Address: http://www.wrh.noaa.gov/Eureka
Backup Offices: WFO Medford and WFO Monterey

Name	Position	E-Mail
Jeff Tonkin	Fire Weather Program Mgr/ IMET	jeff.tonkin@noaa.gov
John Lovegrove	Warning Coord Meteorologist	john.lovegrove@noaa.gov
Nancy Dean	Meteorologist-In-Charge	nancy.dean@noaa.gov

HANFORD/ SAN JOAQUIN VALLEY NWS WEATHER FORECAST OFFICE
900 Foggy Bottom Road, Hanford, CA 93230-5236
Web Site Address: http://www.wrh.noaa.gov/Hanford
Service Backup Office: WFO Sacramento

Name	Position	E-mail
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Mark Burger	IMET Trainee	mark.burger@noaa.gov
Dan Gudgel	Warning Coord. Meteorologist	daniel.gudgel@noaa.gov
Steve Mendenhall	Meteorologist-In-Charge	steven.mendenhall@noaa.gov

LAS VEGAS NWS WEATHER FORECAST OFFICE
7851 Industrial Rd., Las Vegas, NV 89139-6628
Web Site Address: http://www.wrh.noaa.gov/Lasvegas
Backup Offices: WFO Reno and WFO Elko

Name	Position	E-mail
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Andy Bailey	Warning Coord. Meteorologist	andy.bailey@noaa.gov
Kim Runk	Meteorologist-In-Charge	kim.runk@noaa.gov

LOS ANGELES/ OXNARD NWS WEATHER FORECAST OFFICE
520 N. Elevar Street, Oxnard, CA 93030
Web Site Address: http://www.nwsla.noaa.gov/index.html
Backup Office: WFO San Diego

Name	Position	E-Mail
Eric Hilgendorf	Fire Weather Program Mgr/ IMET	eric.hilgendorf@noaa.gov
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Dan Keeton	Meteorologist-In-Charge	dan.keeton@noaa.gov

MEDFORD NWS WEATHER FORECAST OFFICE
4003 Cirrus Drive, Medford, OR 97504
Web Site Address: http://www.wrh.noaa.gov/Medford
Backup Office: WFO Eureka

Name	Position	E-mail
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Mike Stavish	IMET	michael.stavish@noaa.gov
Jim Reynolds	Warning Coord. Meteorologist	james.reynolds@noaa.gov
Roger Williams	Meteorologist-In-Charge	roger.m.williams@noaa.gov

PHOENIX NWS WEATHER FORECAST OFFICE
PAB 500, P.O. Box 52025, Phoenix, AZ 85072-2025
Web Site Address: http://www.wrh.noaa.gov/Phoenix
Backup Office: WFO Tucson

Name	Position	E-mail
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Tony Haffer	Meteorologist-In-Charge	anton.haffer@noaa.gov

RENO NWS WEATHER FORECAST OFFICE
2350 Raggio Parkway, Reno, NV 89512-3900
Web Site Address: http://www.wrh.noaa.gov/Reno
Backup Office: WFO Elko

Name	Position	E-mail
Rhett Milne	Fire Weather Program Mgr/ IMET	rhett.milne@noaa.gov
Wendell Hohmann	IMET – Trainee	wendell.hohmann@noaa.gov
Roger Lamoni	Warning Coord Meteorologist	roger.lamoni@noaa.gov
Jane Hollingsworth	Meteorologist-In-Charge	jane.hollingsworth@noaa.gov

SACRAMENTO NWS WEATHER FORECAST OFFICE
3310 El Camino Ave, Room 227, Sacramento, CA 95821
Web Site Address: http://www.wrh.noaa.gov/Sacramento
Service Backup Office: WFO San Joaquin Valley/Hanford

Name	Position	E-mail
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Kathy Hoxsie	Warning Coord Meteorologist	kathryn.hoxsie@noaa.gov
Elizabeth Morse	Meteorologist-In-Charge	elizabeth.morse@noaa.gov

SAN DIEGO NWS WEATHER FORECAST OFFICE
11440 W. Bernardo Ct, Ste 230, San Diego, CA 92127
Web Site Address: http://www.wrh.noaa.gov/sandiego/index.shtml
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	E-mail
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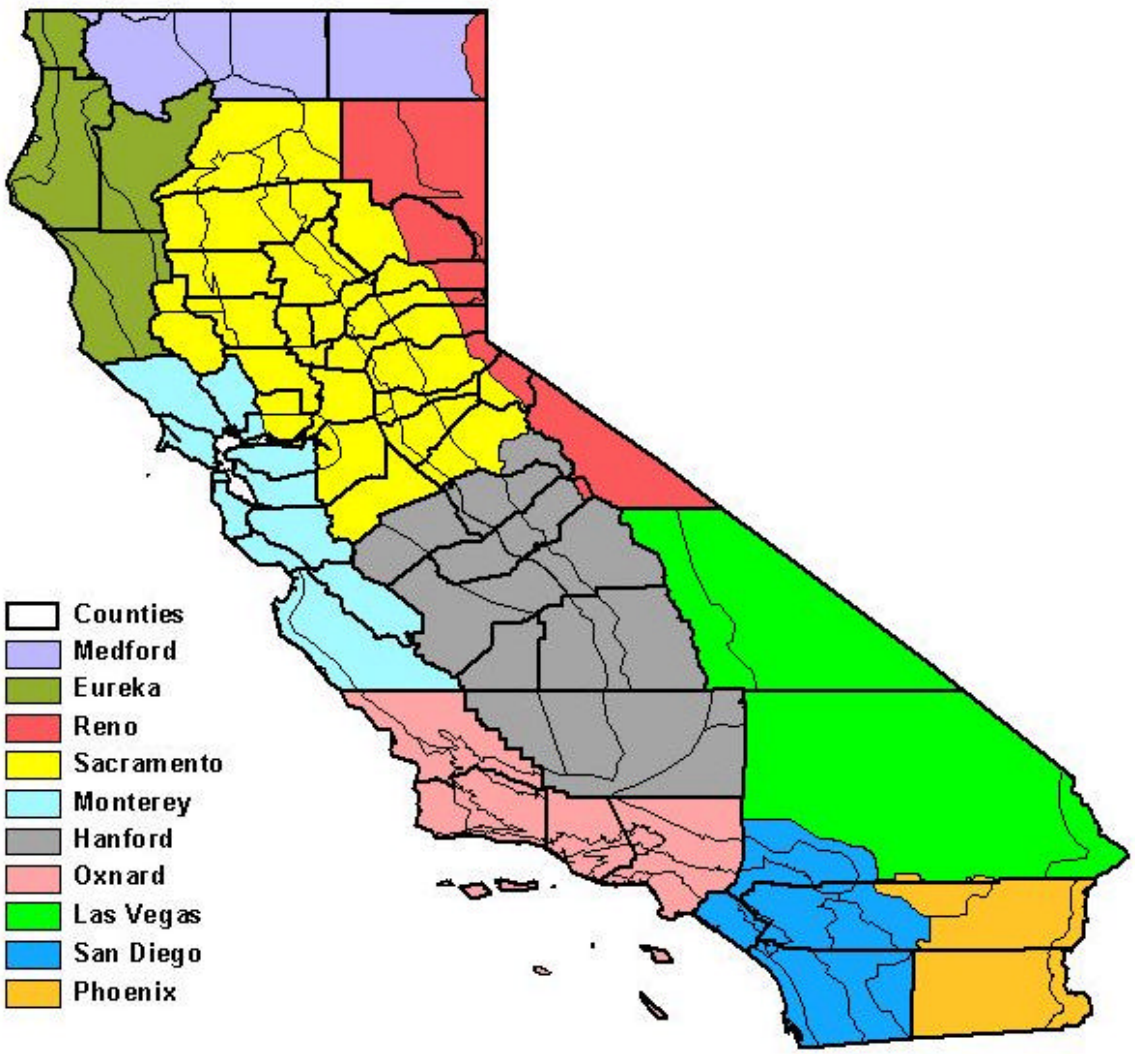
Rob Balfour	IMET	rob.balfour@noaa.gov
Ed Clark	Warning Coord. Meteorologist	edwin.clark@noaa.gov
Vacant	Meteorologist-In-Charge	

SAN FRANCISCO BAY AREA NWS WEATHER FORECAST OFFICE
21 Grace Hopper Ave, Stop 5, Monterey, CA 93943
Web Site Address: http://www.wrh.noaa.gov/Monterey
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	E-mail
Ryan Walbrun	Fire Weather Program Mgr/ IMET	ryan.walbrun@noaa.gov
Vacant	Warning Coord. Meteorologist	
David Reynolds	Meteorologist-In-Charge	david.reynolds@noaa.gov

Map of California with NWS WFO Areas of Responsibility
Includes counties (bold) and fire weather zones (thin)



B. Participating Agencies

1. DOC/NOAA/National Weather Service
2. USDA Forest Service – Pacific Southwest Region
3. DOI Bureau of Land Management – California State Offices
4. DOI National Park Service – Pacific West Region
5. DOI US Fish and Wildlife Service – Pacific Region
6. DOI Bureau of Indian Affairs – Pacific Region
7. California Department of Forestry and Fire Protection

IV. NWS SERVICES AND RESPONSIBILITIES

A. Basic Services – The following constitute the current operational fire weather forecast products provided by the NWS. Significant changes to these forecast services or deployment of new operational forecast products and services will be coordinated through the California Wildfire Coordinating Group (Reference NWSI 10-403). Any non-operational forecast products will be clearly labeled as "Experimental" or "Prototype".

1. Routine Fire Weather Forecasts

All NWS offices serving California will issue routine fire weather planning/pre-suppression forecasts. The intent is to provide general, zone-based information for daily preparedness and planning purposes.

a) Issuance times – During fire season, routine pre-suppression forecasts will be issued twice daily – once in the morning and once in the afternoon - seven days per week. During off-season, forecasts will be issued based on local customer requirements. See Section D, Individual Forecast Office Information, for specific issuance times for each NWS office. The beginning and ending dates of fire-season forecasts will be coordinated through the FWCs.

Forecasts will be updated when a Fire Weather Watch or a Red Flag Warning is issued, the current forecast does not adequately describe expected future weather conditions, or a significant typographical/format error is detected.

b) Access – Forecasts are transmitted automatically through the NWS AWIPS computer system and made available within minutes via WIMS, the NWS offices web sites, and the FWCs' Predictive Services web sites. See Section D for the fire weather web addresses for NWS offices and the FWC pages. Links to forecasts and NWS office web pages also can be found on the National Fire Weather Page at: http://fire.boi.noaa.gov/

c) Content and Format – Forecasts will conform to the national standard narrative, per NWSI 10-401. Morning forecasts will focus on the following 36 hours and afternoon forecasts on the following 48 hours, with general extended outlooks in both cases out to at least five days.

Each forecast will begin with pertinent headlines and a non-technical weather discussion. Headlines are required for Red Flag Warnings and Fire Weather Watches, but may be included for other situations including air stagnation, record heat, severe weather potential, etc..

Forecasts are subdivided into meteorologically similar zones. Each zone or zone grouping will contain at least the following elements for the first 36 or 48 hours, listed in the order they will appear:

a. Headline(s) as appropriate
b. Sky/Weather
c. Temperature
d. Relative Humidity
e. Wind – 20-foot RAWS standard (slope/valley and ridgetop, as appropriate)
f. Extended Outlook to at least day five

Forecasts may include the following optional elements per local customer requirements:

a. 24-hour Trends (of temperature and relative humidity)
b. Chance of Rain or Chance of Wetting Rain (CWR)
c. Lightning Activity Level (LAL)
d. Haines Index
e. Mixing Level or Mixing Height
f. Marine Layer
g. Transport Wind
h. 10,000-foot Wind
i. Ventilation Category (or numeric value)

Beyond 36-48 hours, the forecasts contain general guidance information, keying on significant changes in temperature, humidity, wind, or weather needed for decision-making purposes.

An example of a morning issuance is available in Appendix B1. Descriptions of forecast parameters can be found in Appendix A.

2. Spot forecasts

a) Criteria - Spot forecasts are site-specific forecast products issued for wildfires, prescribed burns, search and rescue operations, aerial

spraying, etc., and are available upon request at any time. Spot forecasts are available to any federal, state, or municipal agency.

When smoke dispersion/smoke management is a concern, prescribed burn spot forecasts can be requested from the FWCs at Redding or Riverside; these are also available from the NWS.

Unless otherwise specified, the NWS expects that spot forecasts will be used either for activity already in progress (such as wildfires) or for briefings or prescribed burn ignitions, which begin within four hours of the desired issuance time. Site-specific forecasts are considered one-time requests and are not routinely updated. However, if determined necessary, updates will be done within 24 hours of issuance of the spot if the following occurs:

a. Representative observations are available, the meteorologist deems the current forecast does not adequately represent current or expected weather conditions which might affect the burn, and the meteorologist has been made aware that monitoring is desired, **OR**
b. The meteorologist is specifically asked for a verbal or written update, such as when forecast conditions appear unrepresentative of the actual weather conditions.

Priority for the issuance and update of spot forecasts, and lead times desired, is as follows:

a. Wildfires or HAZMAT spots.
   - Forecasts for the original issuance or unscheduled updates will be made available as soon as possible and no longer than two hours after the request is received, unless a longer lead time is negotiated.
   - Requests for scheduled updates for ongoing spots (such as for a shift briefing) should be submitted to the issuing office with as much lead time as possible and at least two hours before needed.
b. Prescribed burns.
   - Forecasts for original issuances or scheduled updates should be made with as much lead time as possible, with requests made in the afternoon or evening for delivery of a prescribed burn spot the next morning being the recommended lead time.
   - Forecasts for unscheduled updates, either due to a specific request based on weather at the site or due to monitoring invoked by the phrase, “Request Priority Monitoring” or similar in the remarks section of the spot forecast request,

will be issued as soon as possible and no longer than two hours after it is recognized that an update is desirable.

c. All remaining spot forecasts
   - Forecasts for original issuances and routine or unscheduled updates will be issued as soon as possible, as negotiated with the requestor.

The spot forecast will be corrected when a significant typographical or format error is detected. Corrections should be delivered to users in the same manner as the original spot forecast when possible.

b) Content and Format – Exact content depends on user request. Headlines are always included if a Red Flag Warning or Fire Weather Watch is in effect at the time of issuance.

The forecast period is based on user request and will contain up to three periods, such as "TODAY", "TONIGHT", and "FRIDAY." If requested, and if enough weather information is received to make it feasible, a more specific first period such as "AT 11 A.M. IGNITION" may be used. In these cases, the meteorologist will not just forecast for the planned ignition time, but will include significant changes expected in the forecast parameters for the rest of the usual period, e.g., 11 AM temperature and the expected daytime maximum temperature.

When requested, an outlook for a longer duration will be appended, such as "OUTLOOK FOR WEDNESDAY THROUGH FRIDAY" for a spot requested on Monday.

The most commonly requested forecast parameters are the following:

a. Discussion
b. Sky/Weather (including chance of rain)
c. Maximum/Minimum Temperature
d. Maximum/Minimum Relative Humidity
e. 20-Foot or Eye-Level Winds

Unless otherwise requested, wind forecasts will be of the same type as given in the request, i.e., if eye-level wind observations are provided in the request, than eye-level wind forecasts will be provided in the spot forecast - and similar for 20-foot level winds.

Other elements, such as transport winds, mixing depth, LAL, etc., may be included upon request.

When information for several days in the future, rather than a near-term forecast, is needed, the routine planning/pre-suppression forecast should

be consulted. If it is determined from this that a longer-range spot forecast is desired, a spot for a general weather outlook for specific days may be requested.

c) Procedures – Internet-based programs are the standards for requesting and retrieving NWS spot forecasts and should be used when available. These programs are accessible via the web sites of the various NWS forecast offices that serve California. When Internet access is not available, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in the appendices. Spot forecasts for wildfires will receive the highest priority and will be available as soon as possible after the request. Spot forecasts for prescribed burns will normally be available within two hours from the time the appropriate NWS office receives the request.

Spot forecast requests for prescribed burns should be submitted as far in advance as possible.

At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO along with the request for a spot forecast(s). Internet-based spot request programs, and the backup form, will provide blocks to fill these data in and will indicate which are absolutely essential to receive a spot forecast.

Upon completion, spot forecasts are posted to the appropriate Fire Weather Page of the NWS forecast office web site that received the request. See Section D, Individual Forecast Office Information, for the appropriate web address for obtaining the spot forecast.

The basic format of a spot forecast is shown in Appendix B2.

Spot Forecast Feedback Requirement

Agencies will follow-up requests for spot forecasts with a telephone call to the appropriate NWS forecast office to ensure receipt of the request. Requesting agencies are also highly encouraged to provide fire-line weather observations for the validation of weather forecast accuracy. For further explanation of the feedback process, see Section V, page 51.

3. Fire Weather Watches and Red Flag Warnings

The objective of the NWS Red Flag Program is to highlight as far ahead as possible, up to 72 hours, those critical fire weather patterns that will contribute to extreme fire danger and/or fire behavior. Identification of Red Flag events is a primary responsibility of the forecaster producing the fire weather forecasts.

A Red Flag Warning (RFW) is used to inform agencies of the imminent or actual occurrence of Red Flag conditions. A RFW will be issued immediately when there is high confidence that Red Flag criteria will be met within the next 24 hours, or if those criteria are already being met.

A Fire Weather Watch (FWW) is used to alert agencies to the high potential for development of a Red Flag event in the 24-72 hour time frame. The FWW may be issued for all, or selected, portions within a fire weather zone or region. A watch may be issued in the first 12 hour time period, only for an expected dry thunderstorm event.

Fire Weather Watches and Red Flag Warnings will normally be issued only after conferring with the affected agencies or a representative subset of affected agencies, to include the Redding and Riverside FWCs. This will allow for input on fuel conditions and local concerns. However, the ultimate responsibility for the issuance of a watch/warning rests with the NWS forecaster.

a) Criteria – See Section D, Individual Forecast Office Information, for the specific criteria for issuance of Fire Weather Watches and Red Flag Warnings for each NWS forecast office that is serving California.

b) Dry Lightning – A thunderstorm event that is not accompanied by enough precipitation to significantly wet the fuels. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels. All offices will use the dry lightning matrix for watches/warnings.

c) Product Format and Contents - A short message (RFW) will be used for issuing, updating, and canceling all Fire Weather Watches and Red Flag Warnings, an example is in Appendix B3. That message will include:

   a. Headline including description of watch/warning, description of valid location, and time period for which watch/warning is valid.
   b. Short discussion detailing causes and nature of the event.

d) Procedures and Access - When Fire Weather Watches and Red Flag Warnings are issued, they will be headlined in spot forecasts, the fire

weather narrative, and appropriate zone sections within the fire weather forecast. The headline will be in the same descriptive format as on the RFW product itself. If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the general forecast, the NWS office will verbally notify the affected zone dispatch centers and the Redding or Riverside FWC as soon as possible. Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the forecast, or until canceled or upgraded

Red Flag Warnings and Fire Weather Watches are available within minutes of issuance via WIMS and the web site of the issuing NWS office. Links to all forecasts and NWS office web pages can be found on the National Fire Weather Page at: http://fire.boi.noaa.gov/

e) Verification Goals – Four items are verified for Red Flag Warnings:

1. Probability of Detection (POD) =
correct warnings / (correct warnings + missed warnings). If every event that should have been warned, was warned, then the verification score would be 1.0

2. False Alarm Rate (FAR) =
1 – (correct warnings / (correct + incorrect warnings)). Perfect verification would be zero, indicating that every warning verified.

3. Critical Success Index (CSI) =
correct warnings / (correct + incorrect + missed warnings). Perfect verification would be 1.0. The 1999-2000 baseline for California was .60

4. Lead Time = Number of hours between issue of warning and occurrence of the event. The 1999-2000 baseline for California was 8.2 hours. Lead time for dry lightning RFWs tends to be much shorter than other RFWs.

5. Goals:

POD = 0.91
FAR = 0.27
CSI = 0.68
Lead Time = 9.9 hours

Fire Weather Watches: At the end of the calendar year, the NWS will provide a list of the number of the fire weather watches issued and indicate how many resulted in warnings. These will differentiate between dry lightning watches and watches for other fire weather parameters.

Feedback on Red Flag Warnings and Fire Weather Watches is appreciated.

4. NFDRS Forecasts

The NWS provides weather forecasts for parameters that permit the NFDRS software to predict the next day's fire danger indices.

a) Criteria for Issuance – NWS will issue daily forecasts for use by the NFDRS during for periods determined in consultation with land management agencies. Dates during which these forecasts are needed vary by year and by office. NFDRS observations from land management agencies must be complete and available in WIMS by 1330 LST/1430 LDT. These must be made available to the NWS from WIMS in collectives before 1400 LST/1500 LDT. NFDRS stations that do not have valid observations in WIMS on time will not have next day fire danger indices available.

b) Content and Format – Complies with NWSI 10-4 and is outlined in Appendix B4 . for reference. The NWS NFDRS forecast product is used only by WIMS and is not viewed directly by fire management.

c) Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) the next day will be produced. This will occur through zone trend or station trend forecasts. Regardless of the forecast methodology, NWS will take appropriate measures to ensure that forecast values for NFDRS stations do not unduly deviate from historical possibility for those stations. Towards this end, zone and station trend forecasts will be favored over station specific forecasts.

d) Verification Goals – The goal is to improve on the standards set by the 1996 National Fire Weather Working Team. The following have been agreed to for California as a “strive to meet goal”.

1. Temperature = 5 degrees Fahrenheit
2. RH = 8 percent
3. Wind Speed = 4 miles per hour
4. Fuel Moisture = 2 percent (June through September)

e) 10-hour Fuel Moisture Trends - The U.S Forest Service uses the Sale Activity Level (SAL) Program to regulate operations on public lands. This requires that at some stations 10-hour fuel stick values are still entered in WIMS and that the fire weather forecasters forecast an actual 10-hour fuel moisture trend. The Emergency Command Centers will give this trend to private contractors that are using their own weather stations. In order for this to occur, the fire weather forecast should make

no entries in the trend forecast for max and min temperature or max and min humidity, but instead should include a 10-hour fuel moisture trend. If entries are made for max and min temperatures and humidity, WIMS will ignore the forecast 10-hour fuel moisture trend and revert to using the algorithm.

5. Participation in Interagency Groups

   NWS offices providing service within California are expected to provide representation at the regional AOP meeting held annually. Proxy representation is acceptable. NWS offices are also expected to host at least one meeting per year with local fire management units to strengthen the customer relationship and address local concerns.

B. Additional Services – NWS will provide and maintain a cadre of trained IMETs.

C. Forecaster Training - The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Any NWS meteorologist producing fire weather products will have met the requirements set forth in NWSI 10-405 and augmented by local agreement. These include:

1. Proficiency (complete a-d)

   Proficiency and currency will be documented annually and kept on station.

   a) Completion of fire weather forecaster training requirements defined in NWSI 10-405 and on the Internet at: http://www.nws.noaa.gov/directives/010/pd01004005a.pdf

   b) Work no less than five (5) shifts in a calendar year, handling all fire weather duties of that shift including (but not limited to) the preparation and issuance of:

      a. Routine fire weather forecasts (pre-suppression)
      b. Spot forecasts
      c. Briefings
      d. Non-routine forecasts

      As many training shifts as possible should be worked during the critical fire weather season.

   c) WFO Fire Weather Program Leader and appropriate WFO Meteorologist-In-Charge concur and sign-off on proficiency.

2. Currency

a) The forecaster has prepared and issued 15 fire weather forecasts in the past 12 months at their current duty station, and

b) The forecaster has prepared and issued 10 percent of office spots, or 5 spots in the past 12 months, or has completed an IMET assignment.

c) Annual fire weather drills and/or training seminars conducted by the Science Operations Officer and WFO Fire Weather Program Leader.

3. Proficiency Renewal (required if currency is not met, complete a-b)

a) Forecaster works no less than three (3) shifts with a forecaster who is current, handling all fire weather duties, or successfully completes drill(s), which includes key aspects of the local fire weather program.

b) WFO Fire Weather Program Leader and WFO Meteorologist-In-Charge concur and sign-off on proficiency.

D. Individual Forecast Office Information

1. Northwest California – Eureka, CA

General Information

The NWS Office in Eureka is responsible for providing Fire Weather support for Northwest California. Its area of responsibility includes NWS fire weather zones 201, 202, 203, 204, and 276. (See map in Appendix D1). The Eureka office is staffed with 10 meteorologists trained in fire weather forecasting, and also includes one certified IMET and one IMET trainee. Forecasts and fire weather support are available 24 hours a day, 7 days a week. The office provides a full range of support services including the regular fire weather pre-suppression forecast, spot forecasts for prescribed burns and wildfires, as well any necessary Fire Weather Watch and Red Flag Warnings.

Routine Fire Weather Forecasts

The Eureka office issues routine Fire Weather Forecasts for its zones at 8:30 am and 3:30 pm daily during the fire weather season. During the non-fire season, the Fire Weather Forecast is issued once daily by 8:00 am.

An extended forecast for both the 3-5 day and 6-10 day periods is appended to the Fire Weather Forecast.

NFDRS Zone Trend Forecasts

The Eureka office will issue the NFDRS zone trend forecast for zones 555, 556, 557, 560, 591, and 594 (see table below). These forecasts will be issued daily and no later than 3:30 pm PDT. In order to accommodate forecast preparation, the NFDRS observations must be available by 2:30 pm PDT.

Station Name	WIMS ID	Trend Zone
Brush Mtn.	040404	555
Hoopa	040408	555
Underwood	040426	555
Mad River	040507	555
Ruth	040508	555
Ship Mtn.	040105	556
Eel River Camp	040421	556
Alder Point	040423	556
Eel River MNF	041005	557
Mendocino Pass	041018	557
Rodeo Valley	041015	557
McGuires	041017	557
Boonville	041001	557
Soda Creek	041406	557
Gasquet	040102	560
Maple Creek	040424	560
Schoolhouse	040425	560
Hayfork	040503	591
Big Bar	040501	591
Weaverville	040510	591
Friend Mtn.	040512	591
Trinity Camp	040516	591
Scorpion	040517	591
Backbone	040518	591
Yolla Bolla	040511	594
PattyMocus	040812	594

Red Flag Program

Fire Weather Watches and Red Flag Warnings are issued as required. These products are coordinated with the appropriate adjacent weather offices. Criteria:

1. Foehn Wind Patterns (see matrix in Appendix A3)

2. Dry Lightning Event

3. Other, as warranted

Other possible meteorological events that could trigger a Watch/Warning in the district include effects of strong general winds surfacing, with no rain expected to accompany the event. For example: Strong winds with a dry cold front.

Spot Forecasts

The Eureka office will prepare spot weather forecasts as requested for wildfires and prescription burns at any time. Spot weather forecasts will be issued as promptly as possible, usually within 30 minutes or less. The primary means of requesting and disseminating spot forecasts will be through an Internet-based spot forecast/reply program. This program can be found on the NWS Eureka office Fire Weather Page at: http://www.wrh.noaa.gov/eureka/firewx/
The Fire Weather Special Forecast Request Form (WS Form D-1) may be used and faxed to the office for backup purposes. Spot requests should be accompanied by at least two successive hourly observations from the burn site. Other information, such as ignition time and quad map information, should be included as well. A follow-up call should be made by the requesting agency to ensure receipt of the spot request.

IMET Services

The Eureka office is able to provide one certified Incident Meteorologist (IMET) for dispatch to prescription burns and wildfires. The Eureka office has one IMET trainee available for dispatch as well. See Section VI. B. for IMET dispatch procedures.

Training Services

The office Fire Weather Program manager is capable of providing training support for weather portions of the various land management agency forestry and fire behavior courses. Call NWS Eureka to schedule training.

Additional Information

The Eureka office maintains a Fire Weather Page on its main office home page. This page will contain the routine Fire Weather Forecasts, the Spot Forecast Request/Access Page link, and any Red Flag Warnings or Fire Weather Watches that are in effect. Other items of general information or interest to land managers are included, as well as links to other related sites. The Eureka Fire Weather Pages can be found at http://www.wrh.noaa.gov/eureka/firewx/

2. Central California Interior – Hanford, CA

General Information

The NWS San Joaquin Valley office, located in Hanford, provides fire weather

support for the central California interior. This area covers fire weather zones 289 through 299 (see map in Appendix D1) and NFDRS trend zones 526 through 534. The Hanford office has a staff of 14 meteorologists trained in fire weather forecasting, although a core staff of 11 meteorologists will provide the majority of the forecasts and fire weather support. The office has one Incident Meteorologist (IMET) and one IMET trainee. The Hanford office provides a full range of support services including regular fire weather pre-suppression forecasts, spot forecasts for prescribed burns and wildfires, Fire Weather Watches, and Red Flag Warnings. The office also provides training support for the S-290 course, RX-300 course, and other training requirements as requested by land managers.

Changes from Last Year

This portion of the operating plan will highlight the key differences between fire weather format and services provided this year and last. Land managers affected by these changes include the Stanislaus and Los Padres National Forests, Pinnacles National Monument, Vandenberg Air Force Base, the Bureau of Land Management, California Desert District office, Fort Ord, the San Benito-Monterey and Tuolumne-Calavaras CDF Ranger Units, and the Kern and Santa Barbara County Fire Departments.

1. The following fire weather zone is now the responsibility of the NWS San Francisco Bay Area WFO, located in Monterey:

   FWZ209 - Monterey/Salinas Valley

   Coincident with this transfer of services, the Monterey office also has responsibility for the following NFDRS zones:

   521, 522, 523, 524

2. The following fire weather zones are now the responsibility of the NWS Los Angeles WFO, located in Oxnard:

   FWZ234 - San Luis Obispo County Central Coast
   FWZ236 - Santa Barbara County Central Coast
   FWZ237 - San Luis Obispo County Interior Valleys
   FWZ238 - Cuyama Valley
   FWZ239 - Santa Barbara County South Coast
   FWZ252 - Santa Barbara County Mountains
   FWZ254 - Los Padres National Forest

   Coincident with this transfer of services, the Oxnard office also has responsibility for the following NFDRS zones:

   500, 520, 525

3. The following fire weather zones are now the responsibility of the NWS Sacramento WFO:

   FWZ269 - West Slope Northern Sierra Nevada - Including Blue Canyon (formerly Sierra Nevada - Stanislaus National Forest)

   Coincident with this transfer of services, the Sacramento office also has responsibility for the following NFDRS zones:

   539, 540, 551, 568

4. The following fire weather zones are now the responsibility of the Hanford office:

   FWZ298 - Indian Wells Valley
   (formerly Eastern Kern County Desert)
   FWZ299 - Southeastern Kern County Desert
   (formerly Eastern Kern County Desert)

5. Revision of Red Flag Warning criteria to the following:
   For non-desert areas -

   Severe drying conditions with humidity dropping 30% or more into the low teens to single digits
   OR
   10-minute winds (measured at 20 feet) of 25 mph or more AND relative humidity of 15% or lower, both lasting for at least 8 hours;
   OR
   Humidity of less than 10%, lasting for at least 8 hours;
   OR
   Dry lightning.

   For desert areas -

   10-minute winds (measured at 20 feet) of 25 mph or more AND relative humidity of 15% or lower, both lasting for at least 8 hours and a HIGH fire danger rating.

Routine Fire Weather Forecasts

1. Will be issued to AWIPS, WIMS, and the Internet.

2. During non-fire season, issuance times are 3:00 pm PST (3:30 pm PDT) weekdays, excluding federal holidays. A 7:00 am update will be issued on Mondays or the first day after a federal holiday.

3. During fire season, issuance times are 7:00 am and 3:30 pm PDT (3:00 pm PST) daily.

NFDRS Zone Trend Forecasts

The Hanford office will issue the NFDRS trend forecast for zones 526 through 534 at 3:30 pm PDT during fire season. The following table shows the Weather Forecast Trend Zones. (Note: At this time, no observations are taken in NFDRS Trend Zone 527.) These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pages 6-7). These zones should not be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Kettleman Hills	044602	526	South Fork	045012	530
Los Banos	044003	526	Walker Pass	045014	530
San Luis NWR	044004	526	Crane Flat	044102	531
Batterson	044207	528	Mariposa Grove	044113	531
Catheys Valley	044114	528	Tuolumne Meadows	043611	531
Fancher Creek	044516	528	Wawona	044109	531
Jerseydale	044105	528	White Wolf	043612	531
Mariposa	044106	528	Yosemite Valley	044111	531
North Fork	044204	528	Fence Meadow	044503	532
Shaver	044522	528	Miami	044110	532
Ash Mountain	044701	529	Minarets	044203	532
Delilah	044512	529	Park Ridge	044713	532
Fountain Spgs	044704	529	Dinkey	044521	533
Fountain Spgs RAWS	044731	529	High Sierra	044520	533
Hurley	044517	529	Mount Tom	044511	533
Milo	044708	529	Bald Mtn.	044702	533
Mountain Rest	044505	529	Blackrock	044722	534
Oak Opening	044717	529	Breckenridge	045009	534
Pinehurst	044508	529	Cedar Grove	044719	534
Trimmer	044510	529	Johnsondale	044707	534
UHL Hot Springs	044712	529	Peppermint	044726	534
Bear Peak	044730	530	Rattlesnake	044728	534
Chimney Peak	044721	530	Shadequarter	044724	534
Democrat Springs	045002	530	Sugarloaf	044729	534
Kernville	045005	530	Wolverton	044732	534

Red Flag Program

Red Flag products (Fire Weather Watches and Red Flag Warnings) will be issued when required for fire weather zones 289 through 299. These products will be closely coordinated with the adjacent forecast offices and will adhere to the following criteria:

For non-desert areas -

Severe drying conditions with humidity dropping 30% or more into the low teens to single digits
OR
10-minute winds (measured at 20 feet) of 25 mph or more AND relative humidity of 15% or lower, both lasting for at least 8 hours;
OR
Humidity of less than 10%, lasting for at least 8 hours;
OR
Dry lightning.

For desert areas -

10-minute winds (measured at 20 feet) of 25 mph or more AND relative humidity of 15% or lower, both lasting for at least 8 hours and a HIGH fire danger rating.

Spot Forecasts

The Hanford office will prepare spot weather forecasts as requested for wildfires and prescribed burns at any time. Due to the presence of forecasters on the fire weather desk during the day shift, please try to send prescribed burn requests between 8:00 am and 4:00 pm. Spot weather forecasts will be issued as promptly as possible, usually in an hour or less. Spot requests for wildfires will have a higher priority than those for prescribed burns. The primary means of requesting and disseminating spot forecasts will be through an Internet-based forecast/reply program. This program can be accessed from NWS Hanford's fire weather page at: http://www.wrh.noaa.gov/hanford/forecast/firewx.shtml. For backup purposes, the Fire Weather Special Forecast Request Form (WS Form D-1) can be used. Spot requests must be accompanied by at least one observation from the burn site. The requesting agency should place a follow-up phone call to the Hanford office to ensure receipt of the request for a spot request.

Observations from the previous day or two are very helpful as well. Other information such as ignition time, quad map name, and the latitude/longitude of the burn should also be included. It is also helpful to give advanced warning a day or two ahead of time that a spot request for a prescribed burn is desired. Feedback on spot forecasts is extremely important and can help "fine tune"

subsequent forecasts for the same area. Prompt feedback that includes max/min temperature, max/min humidity, and overall wind conditions during the burn can facilitate useful updates to the spot forecast.

IMET Services

The Hanford office has an IMET available for dispatch to major prescribed burns and wildfires. See Section VI. B. for IMET dispatch procedures. Requests should contain the following information: 1) name of the incident, 2) location of the incident, 3) contact names and telephone numbers, 4) date and time the IMET should report to the fire site, 5) resource order number, and 6) names of the incident commander and the fire behavior analyst (if known). IMET services are also available for toxic spill incidents and other hazardous events.

Training Services

Meteorologists are available to assist with the training requirements of land managers. Requests for these services should be made as far in advance as possible by contacting the NWS Hanford MIC.

Additional Information

The NWS Hanford office maintains a local Fire Weather Information page on its web site. This page contains links to Fire Weather and Spot Forecasts, as well as Fire Weather Watches and Red Flag Warnings. Other information of interest to land managers is also included, such as fire weather observations and links to other related sites. The web site is:
http://www.wrh.noaa.gov/hanford/forecast/firewx.shtml.

3. Southeast California – Las Vegas, NV

General Information

The NWS office in Las Vegas, NV is responsible for providing Fire Weather support for portions of southeast California. The area of responsibility covers fire weather zones 226, 227, 228, and 229 (see map in Appendix D2), which includes all of Inyo County, the San Bernardino County deserts, and the Inyo National Forest in Tulare County. The Las Vegas office is staffed with 12 meteorologists trained in fire weather forecasting. A core staff of 9 meteorologists will provide the majority of the forecasts and fire weather support 24 hours a day, 7 days a week.

Routine Fire Weather Forecasts

1. Will be issued to AWIPS, WIMS, and the Internet
2. Will be issued by 7:00 am and 3:30 pm PDT during the fire season and by 7:00 am PST during the off-season.
3. Forecasts will be issued 7 days a week.
4. Ventilation and Haines Index will be provided in both the morning and afternoon forecasts.
5. A 3 to 5 day forecast will be provided with both the morning and afternoon forecasts at the end of the entire forecast product. A 6 to 10 day outlook will also be included during the fire season. A forecast of wind speed and direction will be included in the 3 to 5 day forecast.

NFDRS Zone Trend Forecasts

The Las Vegas office will issue the NFDRS trend forecast by 3:30 pm PDT and will include California NFDRS zones 517 and 519. If there are no observations received for an NFDRS zone, a forecast will not be made for that zone.

Station Name	**WIMS ID**	**Trend Zone**	**Station Name**	**WIMS ID**	**Trend Zone**
Owens Vly.	044803	517	Salt Wells	045120	519
Oak Creek	044804	517	Poppy Park	045440	519
Golden	045119	519	Lost Horse	045614	519

Red Flag Program

Red Flag Warnings and Fire Weather Watches will be issued as required after coordination with customers and adjacent NWS offices. Red Flag conditions are defined as follows:

For a period of at least 8 HOURS:

1. 20-ft (10-min avg) sustained winds of = 25 mph

...AND…

2. Relative Humidity of = 15%

...AND...

3. NFDRS adjective fire danger of "HIGH" or greater.

OR

Dry Lightning (only for the Sierra Nevada)

Spot Forecasts

The Las Vegas office will prepare spot weather forecasts for prescribed burns and wildfires as requested. These forecasts will be issued as promptly as possible, usually within 30 minutes of receipt of the request. Spot forecast requests for wildfires will have a higher priority than those for prescribed burns. Spot requests should be submitted using the web-based spot forecast program found on our web site. As a backup, you may request a spot forecast by faxing a Fire Weather Special Forecast Request Form (WS Form D-1) or a hard copy of the form off of the web-based spot request program. The requesting agency should place a follow-up phone call to the Las Vegas office to ensure receipt of the request for a spot forecast.

Observations from the previous day or two are very helpful as well. Other information, such as ignition time, quad map name, latitude and longitude, and township and range should also be provided. It is also helpful to give us advanced warning a day or two ahead of time that you will be requesting a spot forecast for a prescribed burn. Feedback on the spot forecasts is extremely important and can help "fine tune" subsequent forecasts for that area, allowing us to serve you better. Feedback should included at least max temperature, minimum relative humidity, and overall wind conditions.

IMET Services

The office Fire Weather Program Manager is also a certified Incident Meteorologist (IMET) and available for dispatch to wildfires and prescribed burns. See Section VI. B. for IMET dispatch procedures.

Ventilation

Mixing height, transport winds, and categorical ventilation are provided for the first two daytime periods in the routine narrative forecasts. Mixing height is forecast for one point in each zone and is given in feet above ground level (AGL). The transport winds are the average wind within the mixed layer and are given in knots. Ventilation is the product of mixing height and transport winds**.**

Note that the ventilation is only for the single points provided and may differ in other locations. The following categories are used to describe the ventilation:

Excellent	100,000 kt-ft or greater
Very Good	70,000-99,999 kt-ft
Good	40,000-69,999 kt-ft
Fair	20,000-39,999 kt-ft
Marginal	8,500-19,999 kt-ft
Poor	less than 8,500 kt-ft

Example: If the mixing height is expected to reach 10,000 ft AGL and the transport wind speed is expected to be 15 knots, the ventilation is 10,000 x 15 = 150,000 kt-ft, which falls within the excellent category.

Training Services

The fire weather program manager or the Warning Coordination meteorologist may be available to handle fire weather training requests from Southeast California customers. Requests for these services should be made as far in advance as possible through the Meteorologist-In-Charge.

Additional Information

The Las Vegas office maintains a Fire Weather Page on its web site home page. This page contains links to forecasts, RAWS observations, annual operating plans, and other fire weather related sites. A clickable map is provided to obtain a narrative forecast. Simply click on the map within the region of interest. The Las Vegas Fire Weather Page is located at:
http://www.wrh.noaa.gov/lasvegas/fire.shtml

4. Southwest California – Los Angeles/Oxnard, CA

General Information

The NWS in Oxnard, CA (NWS LOX) is responsible for providing weather services to the valleys, coasts, and mountains of southwestern California. The forecast area covers the counties of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles. The office is staffed with qualified fire weather forecasters 24 hours per day, seven days per week. Fire weather services are available 24 hours a day. A fire weather desk is staffed between 7:30 am and 3:30 pm, 7 days per week.

Changes from Last Year

NWS LOX can receive and prepare spots forecasts 24 hours per day. Spots are requested and viewed on the LOX web site at:
http://www.nwsla.noaa.gov/firewx.html.

Forecast zones for the pre-suppression forecast have changed in some parts of the forecast area. Geographic descriptions are placed atop each forecast zone.

NWS LOX is available to provide on-site meteorologist (IMET) support.

Routine Fire Weather Forecasts

The forecasts are prepared twice daily (9:30 am and 3:30 pm). During fire weather season, forecasts are issued seven days per week. When not in season,

forecasts are issued Monday through Friday. The fire weather season varies, but a typical season is May through November. The forecast covers 48 hours in detail, and includes a 3 to 5 day outlook. The forecast can be accessed through the NWS LOX fire weather web site http://www.nwsla.noaa.gov/firewx.html, AWIPS, and WIMS.

NFDRS Zone Trend Forecasts

The NWS LOX office will issue the NFDRS trend forecast by 3:30 pm PDT and will include California NFDRS zones 500-507, 520, and 525. If there are no observations received for an NFDRS zone, a forecast will not be made for that zone.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Figueroa	045201	500	Del Valle	045445	505
Los Prietos	045203	500	Clear Creek	045405	506
Vandenberg	045220	500	Vincent	045425	506
Arroyo Grande	044915	500	Warm Springs L.O.	045426	506
Montecito	045218	500	Oak Flat	045431	506
Malibu	045433	501	Acton	045438	506
Whittier Hills Park	045446	501	Camp 9	045441	506
Leo Carrillo	045447	501	Whitaker Peak	045448	506
Beverly Hills	045442	501	Mill Creek	045435	507
Santa Fe Dam	045437	501	Chilao	045436	507
Rose Valley	045314	502	Big Pines	045401	507
Chuchupate	045302	503	Las Tables	044904	520
Ozena	045303	503	Pozo	044908	520
Casita	045308	504	Branch Mtn.	044901	525
Cheeseboro	045313	505	La Panza	044914	525
Saugus	045412	505	Carrizo	044916	525

Red Flag Program

Red Flag Criteria for the Los Angeles / Oxnard forecast area requires dry fuels and any one of the following conditions:

1. Sustained wind greater than 25 mph with relative humidity less than 15 percent for an extended period.

2. Relative humidity less than 10 percent for an extended period.

3. Lightning Activity Level equal to six (6).

The affected land management agencies will be contacted to determine if the fuels are dry enough to warrant a watch or warning.

NWS LOX will coordinate with the Riverside FWC, and the neighboring NWS offices before issuing a watch or warning.

Spot Forecasts

These forecasts are available upon request 24 hours a day, seven days per week. The frequency of issuance, period of the forecast, and forecast parameters (e.g., 20-foot wind, sky cover, temperature, etc.) are determined by the requesting agency and entered on the request form. The preferred method for requesting a spot forecast is to enter the request through an Internet-based request/reply program that is on the NWS LOX web site at http://www.nwsla.noaa.gov/firewx.html. Click on the icon titled "Spot Request Form" at the top of the page. After requesting a spot, call the office and verify that the request has been received. To view the forecast, return to the spot request page and click on the name of your incident. If our web site is not functioning or is unavailable, you may request a spot forecast by faxing a Fire Weather Special Forecast Request Form (WS Form D-1) or calling the forecast office.

IMET Services

Incident meteorologists (IMET) are available upon request. See Section VI. B. for IMET dispatch procedures. IMETs are available to support any incident in which lives and property are threatened and meteorological data are essential for operations (e.g., forest fires and hazardous materials spills). IMETs carry a portable, 2-way satellite communications system that provides access to forecasting aids.

The IMET may also request a Fire RAWS. A Fire RAWS is a remote weather observation station that communicates observations to a satellite, allowing the observations to be accessed nationwide. These stations are mobile and are specifically placed near a scene to allow representative weather observations. Fire RAWS come with a crew of two technicians who maintain the equipment. Fire RAWS can be ordered through the National Interagency Fire Center cache in Boise, Idaho.

Training Services

The fire weather program manager and the assistant are available to provide fire management agencies with weather training; to request weather training, call or email NWS LOX.

Additional Information

The Los Angeles/Oxnard office maintains a Fire Weather Page on its web site home page at http://www.nwsla.noaa.gov/firewx.html

5. Extreme Northern California – Medford, OR

General Information

The NWS in Medford is responsible for providing fire weather support for far northern California. Its area of responsibility includes fire weather zones 280, 282, 284, and 285. (See map in Appendix D1). The Medford office is staffed with 11 meteorologists trained in fire weather forecasting, and also includes two IMETs. Forecasts and fire weather support are available 24 hours a day, 7 days a week. The office provides a full range of support services, including the regular fire weather pre-suppression forecast, spot forecasts for prescribed burns and wildfires, as well as any necessary Fire Weather Watch and Red Flag Warnings.

Routine Fire Weather Forecasts

The Medford office issues routine Fire Weather Forecasts for its zones at 7:30 am and 3:30 pm daily, during the fire weather season. During the non-fire weather season, a Land Management Forecast is issued once a day at 3:30 pm

A 3 to 7 day extended forecast is included at the end of each zone or zone grouping with forecast winds out to Day 5. (Forecast winds are always 20-foot, 10-minute averaged). An 8 to 14 day Outlook is appended at the end of the Fire Weather Forecast.

NFDRS Zone Trend Forecasts

The Medford office will issue the NFDRS zone trend forecast for Zones 585, 586, 587, 588, 589, and 590. (See table below). These forecasts will be issued daily and no later than 3:30 pm PDT. In order to accommodate forecast preparation, the NFDRS observations must be available by 2:30 pm PDT.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Slater Butte	040225	585	Weed	040228	588
Blue Ridge	040203	586	Juanita Lake	040240	589
Sawyers Bar	040222	586	Van Bremmer	040243	589
Somes Bar	040231	586	Canby	040303	590
Callahan	040204	587	Indian Wells	040233	590
Collins Baldy	040237	587	Round Mtn.	040221	590

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Oak Knoll	040218	587	Rush Creek	040312	590
Quartz Hill	040239	587	Devils Garden	040309	590
Brazzi Ranch	040242	588	Crazy Peak	040106	621

Red Flag Program

Fire Weather Watches and Red Flag Warnings are issued as required. These products are coordinated with the appropriate adjacent weather offices. Criteria:

1. Foehn Wind Patterns (see matrix in Appendix A3)

2. Dry Lightning Event

3. Other, as warranted

Other possible meteorological events that could trigger a Watch/Warning in the district include effects of strong general winds surfacing, with no rain expected to accompany the event. For example: Strong winds with a dry cold front.

Spot Forecasts

The Medford office will prepare spot weather forecasts as requested for wildfires and prescribed burns at any time. Spot weather forecasts will be issued as promptly as possible, usually 30 minutes or less for wildfires. The primary means of requesting and disseminating spot forecasts will be through an Internet-based spot forecast request/reply program. This program can be found on the NWS Medford Fire Weather page at: http://www.wrh.noaa.gov/Medford/fire.

The Fire Weather Special Forecast Request Form (WS Form D-1) may also be used and faxed to the office for backup purposes. Spot requests may be made a day prior to the burn, accompanied by at least two hourly observations from the burn site. Other information such as ignition time and quad map information should be included as well. A follow up call should be made by the requesting agency to ensure receipt of the request for the spot.

IMET Services

The Medford office is able to provide two certified Incident Meteorologists (IMET) for dispatch to prescribed burns and wildfires. See Section VI. B. for IMET dispatch procedures.

Training Services

The office Fire Weather Program manager is capable of providing training support for weather portions of the various land management agency forestry and fire behavior courses. To schedule training, please call the Fire Weather Program manager at NWS Medford as far in advance as possible, to ensure availability.

Additional Information

As noted above, the Medford office maintains a Fire Weather page located at http://www.wrh.noaa.gov/Medford/fire**.** This page contains the routine Fire Weather Forecast, as well as the Spot Forecast Request/Access Page link, and any Red Flag Warnings or Fire Weather Watches that are in effect. Other items of interests to land managers are included, as well as links to other sites.

6. Southeast California – Phoenix, AZ

General Information

The NWS office in Phoenix provides fire weather forecast services for the lower deserts of far southeast California, which includes: eastern half of Riverside County, Joshua Tree National Park, Imperial County, and the western side of the lower Colorado River. NWS Phoenix fire weather program also includes southwest and south-central Arizona.

The Phoenix office provides 24-hour fire weather forecast support for the lower deserts of southeast California, comprised of the fire weather zones 230, 231, and 232 (see map in Appendix D2). The office has a staff of 11 fire weather trained meteorologists, including one IMET.

Routine Fire Weather Forecasts

1. NWS Phoenix issues year-round morning Fire Weather Forecasts by 7:30 am PDT (6:30 am PST). During late spring through fall (about April 15 to November 15), the forecast office issues an afternoon Fire Weather Forecast at 3:00 pm daily.

2. Ridge top winds will correspond to the 10,000-foot free air winds. Ridge top winds for lower elevations are usually lighter and more variable than at mountain elevations.

NFDRS Zone Trend Forecasts

NWS Phoenix will issue NFDRS trend forecasts for the standard NFDRS zone 515, dependent upon the provision of NFDRS observations. At the time of this plan, there were no NFDRS observations provided for this zone.

Red Flag Program

Criteria for Fire Weather Watches and Red Flag Warnings are a combination of weather and fire danger ratings. A Red Flag event is defined by the following conditions occurring simultaneously for three or more continuous hours across any portion of a fire weather zone:

a) 20-foot winds sustained at 20 mph or greater or gusting to 35 mph or greater.
b) Relative humidity of 15% or lower
c) NFDRS adjective fire danger rating of "High" or greater

Spot Forecasts

The NWS Phoenix office issues spot forecasts in support of wildfire and prescribed fire operations. Spot forecasts can be requested and retrieved through an Internet-based spot forecast request/reply program on the Phoenix Fire Weather page at: http://www.wrh.noaa.gov/phoenix/fire/index.html. The requesting agency should place a follow-up phone call to the Phoenix office to ensure receipt of the spot forecast request.

IMET Services

The Phoenix office has an IMET available for dispatch to wildfires or prescribed burns. See Section VI. B. for IMET dispatch procedures. Requests should contain the following information: 1) name of the incident; 2) location of the incident; 3) contact names and telephone numbers; 4) date and time when the IMET should report to the fire site; 5) resource order numbers; 6) if known, the names of the incident commander and fire behavior analyst. IMET services are also available for toxic spill incidents or other hazardous events.

Training Services

Meteorologists are available to assist with training requirements of the fire management agencies in the Phoenix fire weather area. Requests for these services should be made as far in advance as possible through the NWS Meteorologist-in-Charge.

Additional Information

The Phoenix office maintains a Fire Weather Page on its Home Page web site. This site contains the Fire Weather Forecasts, spot forecasts, NFDRS zone and/or station trend forecasts, and Fire Weather Watches and Red Flag Warnings. General weather information of interest to land managers is also available at this web site. The web site address is http://www.wrh.noaa.gov/Phoenix/fire

7. Extreme Eastern California – Reno, NV

General Information

The NWS office in Reno is responsible for providing Fire Weather support for western Nevada, northeastern California, and locations east of the Sierra Crest through Mono County. The area of responsibility for the Reno office in California covers Fire Weather Zones 270 through 273, and 278 (see map in Appendix D1). The Reno office is staffed with 12 meteorologists trained in fire weather forecasting, although a core staff of 9 meteorologists will provide the majority of the forecasts and fire weather support. Forecasts and fire weather support is available 24 hours a day, 7 days a week. The office provides a full range of support services including regular fire weather pre-suppression forecasts, spot forecasts for prescribed burns and wildfires, as well as Fire Weather Watches and Red Flag Warnings.

Changes from Last Year

1. The Reno office is now responsible for providing Fire Weather support for western Lassen, southern Mono, and eastern Plumas, Sierra, and Nevada Counties. Affected by these changes include the Lassen, Plumas, Tahoe, and Inyo National Forests. Fire weather zone numbers for all of California have also changed.

2. The Reno office has one Incident Meteorologist (IMET) and one IMET Trainee available for dispatch to forest fires and prescribed burns.

3. The pre-suppression format will now include Chance of Wetting Rain (CWR), which is defined as the probability (in percent) that at least 0.10" of rain will fall over the fire weather zone during the forecast period.

4. Revisions and additions to the Red Flag criteria (Fire Weather Watches and Red Flag Warnings) have occurred for all California Fire Weather Zones forecasted by the Reno office. For details, see the Reno office Red Flag Program section below.

Routine Fire Weather Forecasts

1. Will be issued to AWIPS, WIMS, and the Internet.

2. Issuance times will be 7:30 am and 3:30 pm.

3. Forecasts will be issued seven days a week beginning May 25th.

4. The NFDRS Trend Forecast will be issued by 3:30 pm.

5. Spot weather forecasts will be issued upon request.

NFDRS Zone Trend Forecasts

The Reno office will issue the NFDRS zone trend forecast for zones 518, 541, 542, 572, 576, and 598. The office also has responsibility for NFDRS zone 570; however, at this time, there are no observations in this zone. These forecasts will be issued daily and no later than 3:30 pm PDT, during the fire season. NFDRS zones 518 and 576 correspond to pre-suppression narrative zone 273; NFDRS zone 542 corresponds to pre-suppression narrative zone 272; NFDRS zones 541 and 598 correspond to pre-suppression narrative zone 271; and NFDRS zone 572 corresponds to pre-suppression zone 278.

Station Name	**WIMS ID**	**Trend Zone**	**Station Name**	**WIMS ID**	**Trend Zone**
Benton	043708	518	Ash Valley	040726	572
Crestview	043709	518	Blue Door	040725	572
Rock Creek	043710	518	Bull Flat	040728	572
Fish Slough	043717	518	Doyle	040724	572
Dog Valley	041302	541	Bridgeport	043702	576
Stampede	041804	541	Walker	043707	576
Meyers	042607	542	Markleeville	042802	576
Horse Lake	040727	572	Bogard R.S.	040703	598
Juniper Crk.	040308	572	Gordon	040730	598
Laufman	040709	572	Grasshopper	040721	598
Ravendale	040714	572	Pierce	040915	598

Red Flag Program

Red Flag products (Fire Weather Watches and Red Flag Warnings) will be issued when required.

Red Flag Criteria for zones 270, 272, 273, and 278:

1. Dry Thunderstorms are expected over 15% or more of the forecast area

2. Forecast minimum relative humidity of 15% or less and sustained winds (20 foot - 10 min avg) expected of 20 mph or more for = 8 hours **

3. Forecast minimum relative humidity of 15% or less and widespread wind gusts (instantaneous) expected of 35 mph or more for = 3 hours **

4. In the judgment of the fire weather forecaster, weather conditions will create a critical fire control situation. These conditions may include surfacing mountain

waves east of the Sierra/Cascade Crest, strong microburst winds, cold frontal passage/strong wind shift, or extremely hot and dry conditions.
** For zone 272 the forecasted minimum Relative Humidity is 20%.

Red Flag Criteria for zone 271:

1. Dry Thunderstorms are expected over 15% or more of the forecast area

2. Wind and Relative Humidity Matrix (see Drying Wind matrix in Appendix A3): Assumes 1-hr and 10-hr fuel moistures are low, annual grasses are cured, and no wetting rain has fallen in the past 24 hours.

3. In the judgment of the fire weather forecaster, weather conditions will create a critical fire-control situation. These conditions may include surfacing mountain waves east of the Sierra/Cascade Crest, strong microburst winds, cold frontal passage/strong wind shift, or extremely hot and dry conditions.

Spot Forecasts

The Reno office will prepare spot weather forecasts as requested for wildfires and prescribed burns at any time. Spot weather forecasts for wildfires will be issued as promptly as possible, usually within 30 minutes. The primary means of requesting and disseminating spot forecasts is through an Internet-based spot forecast request/reply program located on the Reno Fire Weather Page at http://www.wrh.noaa.gov/reno/fire. For backup purposes, the Fire Weather Special Forecast Request Form (WS Form D-1) can be used. Spot requests should be made the day of the burn, at least an hour or two before ignition time, and be accompanied by at least one observation from the burn site. The requesting agency should place a follow-up phone call to the Reno office to ensure receipt of the spot request.

IMET Services

The Reno office has one Incident Meteorologist (IMET) and one IMET Trainee available for dispatch. See Section VI. B. for IMET dispatch procedures.

Training Services

The Fire Weather Program manager at NWS Reno is available to provide weather training assistance (such as the S-290 course) to Federal, state, and local agencies. Requests for these services should be made as far in advance as possible by contacting the Fire Weather Program manager.

Additional Information

The Reno office maintains a Fire Weather page on its web site. This page

contains routine Fire Weather Forecasts, as well as Spot Forecasts and any Fire Weather Watches or Red Flag Warnings that are in effect. Other general information of interest to land managers is also included, such as fire weather observations, a fire weather briefing page, satellite and radar images, and links to other related sites. The Reno Fire Weather Home Page is located at: http://www.wrh.noaa.gov/reno/fire.

8. North-Central California – Sacramento, CA

General Information

The NWS office in Sacramento provides fire weather support for the central portion of Northern California. The area covers fire weather zones 213 through 220, 263 and 264, and zones 266 through 269 (see map in Appendix D1). The Sacramento office has a staff of 12 meteorologists, two of whom are designated as Incident Meteorologists (IMETs). The office provides a full range of support services including regular fire weather pre-suppression forecasts, site-specific forecasts for prescribed burns and wildfires, and Fire Weather Watches and Red Flag warnings. The IMETs also supply technical support for the placement of remote automated weather stations.

Changes from Last Year

This portion highlights key differences in the fire weather format and services provided between this year and last. Most of these changes are due to the completion of the transition, which took place in the NWS fire weather program on January 3, 2003. Part of this transition included a major reorganization in areas of fire weather responsibility:

1. The transition of the Sacramento Fire Weather District includes the transfer of service responsibility from Sacramento to other NWS forecast offices:

Coastal areas transferred to the San Francisco Bay Area NWS office in Monterey. This transferred area contains the current fire weather zones 205-208, 211, 265, and 275, which includes the San Mateo-Santa Cruz CDF Unit, Santa Clara Unit, East Bay Parks, most Bay Area fire districts, and most of Sonoma-Lake-Napa CDF Unit.

The east side of the Sierra crest in the Tahoe National Forest was transferred to the NWS office in Reno, NV, which includes fire weather zone 271.

2. The transition also includes the transfer of service responsibility to the Sacramento Fire Weather District:

The Sacramento Valley and surrounding mountains and plateaus transferred from the Redding FWC. This transferred area contains the current fire weather zones:

213-216, 263, 264, 266, and 268, which includes the Shasta-Trinity, Tehama-Glenn, and Butte CDF Units, and parts of the Shasta-Trinity, Lassen, Plumas, and Mendocino National Forests.

The northern San Joaquin Valley and the central Sierra transferred from the NWS office in Hanford, including the Stanislaus National Forest and Tuolumne-Calaveras CDF Unit, which includes fire weather zones 219, 220, and lengthened 269.

The format of the Fire Weather Forecast has changed to account for the new zones and groupings. The format of the individual zone group forecast is similar to last year with the addition of a second night period in the morning forecast.

The morning narrative forecast transmission deadline will now be 7:30 am instead of 9:30 am.

Individual zone forecasts will now be available on a clickable map, which can be found at http://www.wrh.noaa.gov/sacramento/html/fire.html.

Routine Fire Weather Forecasts

The Sacramento office issues routine Fire Weather Forecasts for its zones by 8:00 am and 3:30 pm daily, during the fire weather season. During the non-fire weather season, the fire weather forecast is issued once daily by 3:30 pm Monday through Friday with a Monday morning update issued by 8:00 am. All of these forecasts contain a 3 to 5 day extended outlook. The forecasts are disseminated via WIMS and the Internet. Upon request, any user agency can be placed on a direct e-mail mailing list.

NFDRS Zone Trend Forecasts

The Sacramento office issues the NFDRS trend forecasts by 3:30 pm PDT daily during fire season. Individual station forecasts can be produced when they do not satisfactorily fit the trends appropriate for the other stations. In order to accommodate forecast preparation, NFDRS observations must be available by 2:30 pm PDT. If no observations are received for an NFDRS zone, no forecast can be prepared for that zone.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Forest Hill	041902	535	Thomes Creek	040816	595
Saddleback	041304	536	Alder Springs	041101	595
White Cloud	041806	536	Arbuckle Basin	040632	595
Duncan Peak	041901	536	Eagle Peak	040802	595
Georgetown	042606	538	Stonyford	041503	595
Hell Hole	042608	538	Redding	040611	595

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Owens Camp	042611	538	Whiskeytown	040628	595
Beaver	042601	538	Oak Bottom	040636	595
Bald Mtn.	042603	538	Sacramento NWR	041102	595
Esperanza	043208	539	High Glade L.O.	041402	595
Green Spring	043613	539	Corning	040814	595
Groveland	043603	539	Cohasset	041211	596
Mt. Elizabeth	043605	539	Chico	041210	596
Grizzly Flat	042613	539	Whitmore	040615	596
Blue Mtn.	043203	540	Inskip	040803	596
Pinecrest	043606	540	Bangor	041201	596
Pilot Hill	042609	552	Carpenter Ridge	041213	597
Ben Bolt	042612	552	Chester	040904	597
Mt. Zion	042701	552	Colby Mtn LO	040801	597
Wolf Mtn.	041805	554	Ladder Butte	040723	597
Konocti	041407	558	Lassen Lodge	040815	597
Konocti RAWS	041411	558	Manzanita Lake	040609	597
St. Helena	042106	558	Mt. Harkness	040908	597
Brooks	042202	558	Summit (Hat Mtn)	040633	597
Sugarloaf	040614	592	Westwood	040719	597
Ash Creek	040244	593	Pike Co. L.O.	041701	599
Oak Mtn.	040635	593	Quincy RD	040910	599
Mt. Shasta	040217	593	Smith Peak	040911	599
Sims	040618	593	Cashman	040916	599
Soldier Mtn.	040630	593			

Red Flag Program

Fire Weather Watches and Red Flag Warnings are issued as required. These products are coordinated with the appropriate user agencies and adjacent weather offices. Criteria:

1. Drying Winds (normally during the hot and dry weather of fire season, which runs approximately from late May to the middle of November. See matrix in Appendix A3)

2. Dry Thunderstorm Event

3. Other, as warranted.

Other possible meteorological events that could trigger a Watch/Warning in the Sacramento Fire Weather district effects of strong general winds surfacing with no rain expected to accompany the event (e.g. Strong shifting winds with a dry cold front).

Spot Forecasts

The Sacramento office prepares spot weather forecasts for prescribed burns and wildfires on request. These forecasts are issued as soon as possible after a request. The primary means of requesting and receiving spot forecasts is through an Internet-based spot forecast request/reply program on the NWS Sacramento homepage at http://www.wrh.noaa.gov/sacramento/html/fire.html. The requesting agency should place a follow-up phone call to the NWS Sacramento office to ensure receipt of the request. The forecaster will make every attempt to call the requesting agency when the spot forecast is completed and available on the web page. Fax-based or call-in spot requests serve as backup to the web-based system. If faxing a request is necessary, use the Fire Weather Special Forecast Request Form (WS Form D-1). Requests for spot forecasts for burn projects should be made at least a couple of hours prior to ignition time and be accompanied by at least one observation from the burn site. Other information such as the ignition time, the legal location of the burn area (and the latitude/longitude, if available), the deadline for when the forecast is needed, should also be included in the request.

IMET Services

The Sacramento office has two IMETs available for dispatch to major incidents. See Section VI. B. for IMET dispatch procedures. Requests should contain the following information: 1) name of the incident; 2) location of the incident and ICP; 3) contact names and telephone numbers; 4) date and time the IMET should report to the fire site; 5) resource order number; and 6) names of the incident commander and the fire behavior analyst, if known.

Training Services

The IMETs also provide training support for S-290 courses, which support federal, state, county, and city agencies, and the S-590 Fire Behavior Analyst course in Marana, Arizona. Requests for these services should be made as far in advance as possible by contacting the NWS Sacramento Fire Weather Program manager.

Additional Information

The NWS Sacramento office maintains a local fire weather page on its web site. This page contains routine Fire Weather and Spot Forecasts, as well as Fire Weather Watches and Red Flag Warnings. Other information of interest to land

management personnel, such as RAWS data, climate data, and fire weather links can be found at this web site. The web address is: http://www.wrh.noaa.gov/sacramento/html/fire.html.

9. Extreme Southwest California – San Diego, CA

General Information

The NWS Forecast Office in San Diego is responsible for providing fire weather support for extreme southwestern California. Its area of responsibility includes fire weather zones 242, 243, 248, 250, 255-258, and 260-262 (see map in Appendix D2). The San Diego office is staffed with 13 meteorologists trained in fire weather forecasting, including one certified IMET and one IMET trainee. Forecasts and fire weather support are available 24 hours a day, 7 days a week. The office provides a full range of support services including: routine fire weather pre-suppression forecasts, spot forecasts for wildfires and prescribed burns, and Fire Weather Watches and Red Flag Warnings.

Routine Fire Weather Forecasts

The San Diego office issues routine Fire Weather Forecasts twice a day for its zones. During fire season, scheduled issuance times are 9:00 am and 2:30 pm. Outside of fire season, the issuance times are 7:30 am and 2:30 pm.

Detailed fire weather forecast information is given for each area for the first 36 to 48 hours, and an extended forecast for days 3-7 is also included.

NFDRS Zone Trend Forecasts

The San Diego office will issue the NFDRS zone trend forecasts for zones 508 through 514, and for zone 516. These forecasts are issued daily by 3:30 pm PDT. To facilitate preparation of the NFDRS trend forecasts, the NFDRS observations should be made available by 2:30 pm PDT.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Flynn Springs	045723	508	Beaumont	045617	510
Poway	045725	508	Fawnskin	045101	511
Case Springs	045731	508	Big Pine Flat	045102	511
Roblar	045732	508	Converse	045105	511
Las Flores	045733	508	Strawberry Peak	045110	511
Ammo Dump	045738	508	Rock Camp	045111	511
Talega	045739	508	Mormon Rock	045114	511
Little Tujunga	045411	509	Cranston	045603	512
Tanbark	045421	509	Keenwild	045604	513

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Henninger Flats	045439	509	Kenworthy	045605	513
Claremont	045443	509	Vista Grande	045612	513
Temescal (CNF)	045611	509	Anza	045616	513
Corona	045618	509	Santa Rosa Plateau	045623	513
El Cariso	045619	509	Cameron Fire Station	045704	513
Clark	045624	509	Descanso	045707	513
West Riverside	045693	509	Julian	045708	513
Juniper Flats	045698	509	Mt. Laguna	045709	513
Alpine	045701	509	Oak Grove	045710	513
Goose Valley	045724	509	Pine Hills	045711	513
Valley Center	045734	509	Ranchita	045729	513
Bell Canyon	045735	509	Potrero	045730	513
Fremont Canyon	045736	509	Apple Valley	045117	514
San Miguel	045737	509	Valyermo	045423	514
Lytle Creek	045108	510	Saddleback Butte	045444	514
Mill Creek (BDF)	045109	510	Yucca Valley	045112	516
Devore	045113	510	Burns Canyon	045125	516
Banning	045601	510			

Red Flag Program

Criteria for the Non-Desert Sections of the San Diego Fire Weather District:

1. Sustained 20-foot winds greater than 25 mph and relative humidity below 15%
2. Dry lightning expected
3. Sustained relative humidity less than 10%

Note: All the above should be with low/critical 10-hour fuel moistures, and/or live fuel moisture less than 120%, and/or below the threshold fuel conditions that are critical to local user agencies.

Criteria for the Desert Sections of the San Diego Fire Weather District:

1a. Widespread 20-foot winds (10-min average) of 25 mph or greater
…AND…
1b. Relative humidity less than 15%
…AND…
1c. High fire danger rating

Note: All of the above should be expected for at least 8 hours.
2. Dry lightning expected when Watches/Warnings are also concurrently in effect for other adjacent Fire weather zones.

Spot Forecasts

These forecasts are available upon request 24 hours a day, seven days per week. The frequency of issuance, period of the forecast, and forecast parameters (e.g., 20-foot wind, sky cover, temperature, etc.) are determined by the requesting agency and entered on the request form. The preferred method for requesting a spot forecast is through an Internet-based spot forecast request/reply program on the San Diego web site at http://www.wrh.noaa.gov/sandiego/fcst/firewx.shtml. Click on "Spot Forecast Request Form" at the top of the page. After requesting a spot, call the office and verify that the request has been received. To view the forecast, return to the spot request page and click on the name of your incident. If our web site is not functioning or is unavailable, request a spot by faxing or calling the forecast office. To fax a request, use the Fire Weather Special Forecast Request Form (WS Form D-1).

IMET Services

The San Diego office has one Incident Meteorologist (IMET) and one IMET Trainee available for dispatch. See Section VI. B. for IMET dispatch procedures. Requests should contain the following information: 1) name of the incident; 2) location of the incident and ICP; 3) contact names and telephone numbers; 4) date and time the IMET should report to the fire site; 5) resource order number; and 6) names of the incident commander and the fire behavior analyst, if known.

Training Services

Weather-related training and instruction can be provided in support of the land management agency forestry and fire behavior courses.

Additional Information

The NWS San Diego office maintains a local fire weather page on its web site. This page contains routine Fire Weather and Spot Forecasts, as well as Fire Weather Watches and Red Flag Warnings. Other information of interest to land

management personnel, such as RAWS data, climate data, fire weather links, can be found at this web site. The web address is: http://www.wrh.noaa.gov/sandiego/fcst/firewx.shtml.

10. Central Coast California – San Francisco Bay Area/Monterey, CA

General Information

The NWS office in Monterey is responsible for providing Fire Weather support for the San Francisco Bay and Monterey Bay regions. Its area of responsibility includes fire weather zones 205-211, 265, 274, and 275. (see map in Appendix D1). The Monterey office is staffed with 15 meteorologists trained in fire weather forecasting and also includes one IMET trainee. Forecasts and fire weather support are available 24 hours a day, 7 days a week. The office provides a full range of support services including the regular fire weather pre-suppression forecast, spot forecasts for prescribed burns and wildfires, as well as any necessary Fire Weather Watches and Red Flag Warnings.

Routine Fire Weather Forecasts

The Monterey office issues routine 5-day Fire Weather Forecasts at 7:00 am and 3:00 pm daily during the fire weather season. During the non-fire weather season, the 5-day Fire Weather Forecast is issued once daily at 3:00 pm Monday through Friday, except for a Monday morning update issued by 7:00am.

NFDRS Zone Trend Forecasts

The Monterey office will issue the NFDRS zone trend forecast for zones 521, 522, 523, 524, 547, 548, 549, 550, 559, 562, and 566. (See table). These forecasts will be issued daily and no later than 3:30 pm PDT, during the fire season. In order to accommodate forecast preparation, the NFDRS observations must be available by 2:30 pm PDT.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Big Sur	044302	521	Los Altos	043911	549
Arroyo Seco	044301	522	Pulgas	043309	549
Hastings	044318	522	Ben Lomond	043809	549
Hunter-Liggett	044317	522	Los Gatos	043913	549
Bradley	044303	523	Oakland North	043402	550
Hollister	044406	523	Oakland South	043403	550
Hernandez	044409	524	Chalks	043801	550
Parkfield	044310	524	Corralitos	043802	550
Santa Rita	044408	524	Saratoga Summit	043805	550

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Black Diamond	043008	547	Gold Ridge	042011	559
Briones	043010	547	Hawkeye	042010	559
Morgan Hill	043903	547	Barnaby	042308	559
Rose Peak	043404	547	Santa Rosa	042009	559
Sunol	043401	547	Sky Oak	042307	559
Calaveras	043405	547	Rock Springs	042301	559
Livermore	043406	547	Marin	042306	559
Mallory Rdg	042011	547	Pole Mtn.	042008	562
Las Trampas	043009	547	Muirwood	042305	562
La Honda	043304	549			

Red Flag Program

Fire Weather Watches and Red Flag Warnings are issued as required. These products are coordinated with the appropriate adjacent weather offices. In addition, coordination will be attempted with affected land agencies. Criteria:

1. Drying Winds (normally during the hot and dry weather of fire season, which runs approximately from late May to the middle of November. See matrix in Appendix A3)

2. Dry Thunderstorm Event.

3. Other, as warranted.

Other possible meteorological events that could trigger a Watch/Warning in the district include effects of strong general winds surfacing, with no rain expected to accompany the event.

Spot Forecasts

The Monterey office will prepare spot weather forecasts as requested for wildfires and prescription burns at any time. Spot weather forecasts will be issued as promptly as possible, usually within 30 minutes or less. Spot forecast requests for wildfires will have a higher priority than those for prescribed burns. Spot requests should be submitted through an Internet-based spot forecast request/reply program found on the NWS Monterey web site at http://www.wrh.noaa.gov/Monterey/fireweather.html. After submitting the request electronically, please call the Monterey office to verify that the request was received. In addition, spot requests should be made the day of the burn and accompanied by at least two successive hourly observations from the burn site. Observations from the previous day or two are very helpful as well. Other

information such as the ignition time, the legal location of the burn area (and the latitude/longitude, if available), the deadline for when the forecast is needed, should also be included in the request. It is also helpful to give advanced warning a day or two ahead of the time that you will be requesting a spot forecast for a prescribed burn. Feedback on the spot forecasts is extremely important and can help "fine tune" subsequent forecasts for that area, allowing us to serve you better. Feedback should include at least max temperatures, min humidity, and overall wind conditions. The Fire Weather Special Forecast Request Form (WS Form D-1) may be used and faxed to the office for backup purposes.

IMET Services

The Monterey office currently has one IMET trainee available for dispatch to prescription burns and wildfires. See Section VI. B. for IMET dispatch procedures.

Training Services

The office Fire Weather Program leader is capable of providing training support for weather portions of the various land management courses, such as S-290, etc..

Additional Information

As noted above, the Monterey office maintains a Fire Weather Page linked from the web site home page. This page will contain the routine Fire Weather Forecast, as well as the Spot Forecast Request/Access Page link, and any Red Flag Warnings or Fire Weather Watches that are in effect. Other items of general information or interest to land managers are included, as well as links to other related sites. The Monterey Fire Weather Page can be found at: http://www.wrh.noaa.gov/Monterey/fireweather.html.

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Some specific responsibilities of Wildland Fire Agencies are listed below:

A. Operational Support and Predictive Services – GACC meteorologists at the FWCs in Redding and Riverside combine forecast information from NWS and other sources into area-wide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence to form the Predictive Services group, which produces integrated fire weather / fire danger assessments for California. The intent of Predictive Services is to provide strategic, regional, and sub-regional information to assist in preparedness, movement, and allocation of fire-fighting resources. The Predictive Service units at Redding and Riverside are the exclusive providers of fire

danger and fire potential forecasts within California beyond the "next day" NFDRS forecasts provided by the NWS. All products are available online, and can be obtained from either the North Ops FWC web site at http://www.fs.fed.us/r5/fire/north/fwx or the South Ops FWC web site at http://www.fs.fed.us/r5/fire/south/fwx.

Predictive Services Products – (Examples provided in Appendix C)

1. **Daily Product - Fire Weather Discussion / Fire Danger Forecast:** one each for the Northern and Southern California Geographic Areas. This text product is written at Redding for the North and at Riverside for the South. It's purpose is to take the large quantity of forecast information provided by the five NWS forecast offices in each Geographic Area, and meld it along with Fire Danger and any other necessary information into a single forecast product for Geographic Area. These forecasts are sub-divided into the Predictive Service Areas (PSAs) of the fire agencies. They have only one weather discussion and a larger scope, which combined with shorter text length, make them a suitable alternative for dispatchers disseminating weather information to field operations. The "meteorology of the day" is coordinated between the FWCs and the NWS offices in a daily conference call.

Issuance Schedule: 9:30 am year around, with an additional 3:30 pm issuance during fire season.

2. **10-day Fire Weather/Danger Outlook:** Issued once a week, it contains current and forecast weather, fire danger highlights, and trends for each PSA over the coming ten days. The weather section seeks to highlight three areas: Major changes in the weather pattern during the next 10 days, large departures from normal, and potential for coming red flag or other significant events beyond the short (1-3 day) range. Fire Danger information is portrayed numerically in terms of NFDRS Energy Release Components (ERC), with graphs available for easy comparison to normal and extreme values. There is also a text statement on fire danger, highlighting expected changes or trends over the 10-day period. [Note: The FWCs are working to develop a system in California such as that currently used in the Pacific Northwest. In this system, past gridded forecast data have been correlated with observed RAWS weather, then equations developed, so that future gridded forecast weather data could be used to predict RAWS observations out through 10 days. Fire Danger predictions can then be based on these data.]

Issuance Schedule: Fire season only, issued every Tuesday morning.

3. **Monthly Assessments of Fire Potential**: These combine all available weather, climate, fuels, and fire danger information in order to make a prediction of fire business across the Geographic Area for the coming month. The assessments try, when possible, to highlight the periods and potential for large fire activity and resource utilization, relative to normal.

Issuance Schedule: Year around, a few days before the end of each month.

4. **Seasonal Assessments**: These are estimates of fire potential for longer periods, ranging from three months to an entire fire season in duration. A nationwide collaboration of meteorologists, climatologists, and fuels-and-fire danger experts takes place in the late winter or early spring. This is where season-to-date precipitation, snow pack, temperature and fuels information is amalgamated and a consensus climate forecast is produced by the experts, extending well into the fire season. It is expected that the assessments will be updated as needed back at the Geographic Areas – see below for California.

Issuance Schedule: Pre-season assessment (preliminary) done at the national gathering around early March. In California, the first update will commonly come between late April and mid-May, with a second one in early to mid fire-season.

B. Prescribed Burn Spot Forecasts - The Fire Weather Centers will provide site-specific prescribed burn (spot) forecasts, for any requesting agency, where smoke dispersion and/or smoke management are concerns. The FWCs have an increasing role in helping the fire agencies accomplish their prescribed burn acreage targets, while minimizing impacts on air quality. Along with this program, the FWCs will work closely with the California Air Resources Board (CARB), the Air Districts, and Air Pollution Control officers. The FWCs will sponsor daily conference calls with prescribed burn managers, CARB, and the air districts. These calls help coordinate burning, especially during the new category of "marginal burn days" as outlined in the recent Title 17 update.

C. Program Management - Management of federal land management and fire agencies' fire weather programs and responsibilities.

1. RAWS/NFDRS – The Regional RAWS Coordinators of the various agencies manage the interagency RAWS program within California. This includes regular monitoring of data quality and assisting with station maintenance and acquisition issues. It also involves development of, and assistance in putting on RAWS training classes. Current agency RAWS coordinators in California include:

USFS	Beth Little	(530) 226-2710
BLM	Art Porter	(530) 252-5326
NPS	Corky Conover	(559) 565-3129
CDF	Pete Guilbert	(916) 653-6608

2. Liaison – The Fire Weather Center Team Leader at each Geographic Area (North and South) will be the primary liaison between field fire managers and various service providers including the NWS, the private sector, and the research community.

D. Monitoring, Feedback and Improvement of Fire Weather Information – Through the User Assessment Team, plans for monitoring forecast services by all meteorologists will be developed and tested. For 2003, the emphasis will be on NWS forecasts for selected forests and CDF units. Based on the results, a more comprehensive plan will be developed in the fall for the 2004 season.

E. FWCs Proficiency and Currency

1. Proficiency

a) Completion of S-190, S-290, and S-390

b) Work no less than five (5) shifts handling all operational products. This includes the preparation and issuance of:
   a. Daily morning Fire Weather / Fire Danger product
   b. Afternoon update to above morning product
   c. Smoke Transport and Stability Forecast
   d. All Site-specific (spot) forecasts requested, for burns where smoke dispersion or smoke management is a concern

c) Conduct at least 2 each and 10 total of the following:
   a. Daily coordination calls with other GACC office (Redding or Riverside)
   b. 0830 PDT conference call with the NWS
   c. 1030 PDT Briefing for Ops/ECC personnel
   d. 1300 PDT CARB/burners conference calls
   e. Special briefings and conference calls for CDF and Federal agencies

d) Work with Intel Officer and be able to produce all Predictive Services products (using in-office guidelines or help sheets, as necessary). Included in this are the:
   a. Weekly Outlook, issued Tuesdays
   b. Monthly Weather Assessments, issued by late in the prior month
   c. Seasonal Weather and Fire Season Assessments, before early-to-mid fire season

e) The FWC Team Leader will sign-off on proficiency

2. Currency

a) The forecaster has prepared and issued at least 12 of the operational products (listed in 1.b.) during the past three months. At least 3 of the 12 should be site-specific (spot) forecasts.

b) If IMET qualified, must maintain proficiency in accordance with NWCG Technical Specialist standards.

F. Technology Transfer – GACC meteorologists will work to integrate advanced technology analytical and prediction systems into fire management planning and operations. Some efforts will include:

1. Regional numerical modeling of weather and smoke dispersion. The FWCs are integral players in the CANSAC (California and Nevada Smoke and Air Consortium) project, which will develop and run an MM5 meso-scale weather model across CA and NV. This project is spinning up in 2003.

2. Proper use of RAWS and NFDRS.

3. Research and development to advance fire meteorology.

G. Agency Computer Systems – Where fire management computer systems like WIMS are locally available, access to the systems will be granted to the NWS to provide or develop services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.

H. Fire Weather Observations

1. RAWS and NFDRS Observations

Fire weather observations for stations that desire next-day forecasts will be entered into WIMS no later than 1:30 pm PST (2:30 pm PDT). Observations from Remote Automated Weather Stations (RAWS) sites will be the latest data available from the satellite interrogation. RAWS and NFDRS stations are expected to be sited and maintained according to NWCG PMS 426-3 "National Fire Danger Rating System Weather Station Standards". Proper siting of weather stations has always been a high priority in California. The GACC meteorologists are available to assist land or fire managers in selecting proper sites. Annual RAWS maintenance requirements should be adhered to strictly.

2. Fireline Observations and Spot Forecast Feedback

Fireline Observations – Representative observations are required when requesting a spot forecast, whether for a wildfire, prescribed burn, or other project/need. Distance is not the only factor in determining whether an observation site is considered representative. Observations taken only half a mile from the burn site, but beyond a ridgetop and in another drainage, may not be representative for a variety of reasons (e.g. changes in aspect, elevation, local wind direction, vegetative cover, etc.). On the other hand, observations from a fixed RAWS three miles away from the project site could still be quite representative, if it is similar in elevation, aspect, local wind flow, vegetative cover, etc.

Fire agency personnel will take standard fireline observations of temperature, relative humidity, wind direction and speed, and weather/sky condition consistent with guidance provided in NFES 2140 "Weather Station Handbook – An Interagency Guide for Wildland Managers."

Fire agency personnel are encouraged to discuss the fire or burn with the meteorologist preparing the spot forecast to alert the forecaster to details which would not otherwise be apparent, such as variations in humidity in a large and complex site, when winds switched from upslope to downslope, and similar items which will enhance the quality of the resulting spot forecast.

Spot Forecast Feedback and Validation – Feedback on spot forecasts is requested to validate forecasts and improve accuracy; it should be provided to the appropriate weather office (NWS or FWC) within 12-24 hours of the issuance of any spot forecast for prescribed burn or wildland fire use purposes. Feedback on forecasts issued for wildfires is encouraged. The effort to provide feedback applies mainly to Belt Weather Kit or Kestral observations, since RAWS data are more readily available to the forecaster via the Internet for feedback.

Spot Feedback: The character of temperature, humidity, and wind affecting the burn period. Information made available to the NWS within 24 hours of forecast issuance or before issuance of the next spot forecast, whichever is first.

At a minimum, the following must be included (assuming daytime burn):

a) Maximum temperature
b) Minimum relative humidity
c) Significant afternoon winds (speed and direction)

In the event of nighttime burning, conditions affecting the burn period could include minimum temperature and maximum relative humidity.

Acceptable Methods of Providing Feedback:

a) Phone call to appropriate NWS or FWC office
b) Faxed copies of fireline (belt weather) observations
c) Submission of information (see example) via "Feedback" section of Internet spot forecast
d) Faxed or electronically transmitted copies of hourly weather data from an on-site portable weather station
e) Notification of deployment of a portable GOES telemetered RAWS onsite, so NWS can download data from the Internet

I. Reimbursement for NWS Provided On-site Support and Training Assistance – Federal agencies will reimburse the NWS for all costs incurred by the agency for IMET support and training assistance, per the procedures set forth in the National Agreement. The

State of California has an agreement with the NWS, which is used for cost reimbursement.

VI. JOINT RESPONSIBILITIES

A. Training – Meteorological training assistance can be provided by either NWS or GACC meteorologists. The NWS forecast offices primarily handle the numerous local courses that occur within their County Warning Areas. The FWCs can also provide local service, but their primary role is with all regional and national level courses. Requests for these (regional and national) courses should be directed to either the Redding or Riverside FWC. Each NWS office and FWC should have at least one person qualified to teach courses up through Intermediate Fire Behavior (S-290/390).

Requests for training from NWS offices should be directed to that office's Fire Weather Program manager or Meteorologist-In-Charge. If the called office is not able to provide an instructor for a course, that office will assume the responsibility for finding an instructor. Requests for training from the FWCs should be directed to either the Training Coordinator or Team Leader of the FWC. In all cases, sufficient advance notice should be given to allow for scheduling and proper preparation. Costs incurred by NWS in providing training assistance will be borne by the requesting agency. Costs incurred by FWC instructors are covered in their annual budget, without need for reimbursement.

B. Incident Response – The procedures for requesting IMETs will follow the guidelines outlined in the National MOA, the 2003 National Mobilization Guide, the 2003 California Mobilization Guide, and CDF Procedure No. 302. The following information will be provided to the requested IMET:

1. Name of fire
2. Location of fire
3. Directions to location where the IMET is to report and location of Incident Base.
4. Name of Incident Commander, Plans Chief, and Fire Behavior Analyst, if available.
5. Request and Resource Order number for IMET

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location that is free of excessive dust, heat and moisture, protection from wind and other elements, table, and chair. Transportation and shelter arrangements should be made at the time of request; 120 volt AC power is desirable.

ATMUs will no longer be on a pre-order with an IMET. IMETs will arrive on-site with their equipment and ATMUs may be ordered by the IMET after arriving on-site.

Below is a list of IMETs and ATMUs in the Northern and Southern California Area:

1. Northern and Southern California Area Incident Meteorologists
   (T) designates an IMET trainee

NWS:

Location	Name	Agency	ROSS Unit ID
Eureka, CA	Jeff Tonkin (T)	NWS	CA-EKAW
Eureka, CA	Nancy Dean	NWS	CA-EKAW
Hanford, CA	Cindy Bean	NWS	CA-HNXW
Hanford, CA	Mark Burger (T)	NWS	CA-HNXW
Las Vegas, NV	Jim Harrison	NWS	NV- VEFW
Medford, OR	Frederic Bunnag	NWS	OR-MFRW
Medford, OR	Mike Stavish	NWS	OR-MFRW
Monterey, CA	Ryan Walbrun (T)	NWS	CA-MTRW
Oxnard, CA	Eric Hilgendorf (T)	NWS	CA-LOXW
Phoenix, AZ	Bob Berkovitz	NWS	AZ-PSRW
Reno, NV	Rhett Milne	NWS	NV-REVW
Reno, NV	Wendell Hohmann (T)	NWS	NW-REVW
Sacramento, CA	Basil Newmerzhycky	NWS	CA-STOW
Sacramento, CA	Mike Smith	NWS	CA-STOW
San Diego, CA	Rob Balfour	NWS	CA-SGXW

FWC:

Redding, CA	John Snook	USFS	CA-NZF
Redding, CA	Brenda Graham	USFS	CA-NZF
Redding, CA	Steve Leach (T)	BLM	CA-NZF
Riverside, CA	Tom Rolinski	BLM	CA-OSC
Riverside, CA	Matt Shameson	USFS	CA-OSC

2. Northern and Southern California Area ATMUs

CACHE	RESOURCE
Redding, CA	CA-01
Redding, CA	CA-03
Redding, CA	CA-05
Redding, CA	CA-07
Riverside, CA	CA-02
Riverside, CA	CA-04
Riverside, CA	CA-06

C. Briefings – Either NWS or GACC meteorologists will conduct briefings upon request, time and resources permitting.

D. Daily Coordination Conference Calls – Coordination conference calls will be conducted between the FWCs and the WFOs during fire season. See Appendix E for further details on these calls.

E. WIMS ID's for NFDRS Stations – All NFDRS observation stations are assigned a 6-digit station identification number for use in WIMS. The Northern California or Southern California FWCs must be contacted for assignment of a 6-digit number for

any new station, or for any changes in location made to existing stations that already have a WIMS ID number. The FWCs will work with local and regional NWS offices to obtain appropriate 6-digit ID's and will notify the NWS of any new or relocated NFDRS stations.

VII. EFFECTIVE DATES ON THE AOP

Approximately, May 28, 2003 to May 28, 2004.

Strictly, this AOP shall be effective on the date the last signature is placed on the signature section and it will remain in effect until the date the last signature is placed on the signature page the following year. Updates or amendments may be added in the interim upon agreement of all signatories.

VIII. AGENCY SIGNATURES

_____ _____

Steve Gage Date
Chair, California Wildfire Coordinating Group

_____ _____

Elizabeth Morse Date
NWS, State Liaison Official

IX. APPENDICES

APPENDIX A – FORECAST PARAMETER DEFINITIONS

1. General Parameters

Sky/weather – Cloud cover and weather. Weather could include rain, snow, showers, thunderstorms, etc. Cloud cover is as follows

Clear	10% or less cloud cover
Mostly Clear/Mostly Sunny	10% - 30% cloud cover
Partly cloudy/Partly Sunny	40% - 60% cloud cover
Mostly Cloudy	70% - 80% cloud cover
Cloudy/Overcast	90% or greater cloud cover

Temperature and 24 hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Humidity and 24 hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Wind - 20 foot RAWS standard – Surface wind speed and direction as altered by local terrain and surface roughness and measured per instrumentation and siting standards set by NWCG for the RAWS program and NFDRS. In practice, surface wind forecasts produced based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide open rangeland or desert is predominant. This same comparison will be used in considering stations other than RAWS to validate forecasts.

Ridegtop winds – Synoptic scale wind speed and direction at or just above mean ridgetop level.

Chance of Rain – Probability of occurrence or areal coverage of 0.01" or greater liquid equivalent precipitation.

Haines Index – A numerical means to indicate the potential for existing large wildfires to experience extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the Southwest Area, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index values vary from 2 to 6 and classifications are shown below:

HAINES INDEX	POTENTIAL FOR LARGE FIRE GROWTH
2 or 3	Very Low
4	Low
5	Moderate
6	High

(Haines Index does **not** include the effects of wind on fire spread.)

APPENDIX A – FORECAST PARAMETER DEFINITIONS (LAL)

2. Lightning Activity Level (LAL)

LIGHTNING ACTIVITY LEVEL GUIDE FOR FIRE WEATHER OBSERVERS

			Individual storm cell cloud to ground lightning discharges		
LAL	**Cloud and Storm Development**	**Areal Coverage**	**Counts [1]cg/5 min**	**Counts [1]cg/15 min**	**Average [1]cg/min**
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

[1] Cloud-to-ground lightning discharges

APPENDIX A – FORECAST PARAMETER DEFINITIONS

3. Drying Foehn Wind Matrix for Red Flag Watch/Warnings

Use the matrix below to guide in decisions on Watch/Warning issuance. The Watch/Warning criteria are most commonly met during strong north to northeast wind episodes. These episodes usually occur first as northerly winds in the northern Sacramento Valley or Lassen/Plumas west slopes shifting to more northeast and affecting the west slopes of the central Sierra foothills and the west slopes of the central Coast Range about a day later. The matrix assumes 10-hour fuel moisture of less than 6%, annual grasses are cured, and that no wetting rain (greater than 0.10 inch) has fallen in the last 24 hours. Generally, if the event is less than 12-16 hours away, issue the Red Flag Warning, otherwise issued a Fire Weather Watch. Borderline criteria for a Watch or Warning should be coordinated with the appropriate agency.

Sustained 20-foot Wind Speed
(Note: the wind event should be expected to last at least 8 hours)

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				**W**
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			**W**	**W**
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		**W**	**W**	**W**
Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	**W**	**W**	**W**	**W**

APPENDIX B – NWS FORECAST EXAMPLES

1. NWS Fire Weather Forecast – Morning Issuance Example

```
FNUS56 KSTO DDHHMM
FWFSTO

FIRE WEATHER FORECAST (FOR name of area, optional)
NATIONAL WEATHER SERVICE SACRAMENTO CA
830 AM PST WED MAR 5 2003

...HEADLINE...(Required for Red Flag Warnings and Fire Weather Watches and
significant features at other times)

.DISCUSSION...(Concise, clear, non-technical explanation of the
current/forecasted fire weather)

CAZ013-014-DDHHMM-
EASTERN TRINITY AND SHASTA NF-
FIRE WX ZONES 213 214
TIME-DATE (example: 830 AM PST WED MAR 5 2003)

.TODAY...
SKY/WEATHER.............
MAX TEMPERATURE.........
        24 HR TREND.....(optional)
MIN HUMIDITY............
        24 HR TREND.....(optional)
WIND (definition).......(include definition of wind, e.g. 20-ft/10-min avg,
                         slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, CWR, Haines
                         Index, etc.)

.TONIGHT...
SKY/WEATHER.............
MIN TEMPERATURE.........
        24 HR TREND.....(optional)
MAX HUMIDITY............
        24 HR TREND.....(optional)
WIND (definition).......(include definition of wind, e.g. 20-ft/10-min avg,
                         slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, CWR, Haines
                         Index, etc.)

.TOMORROW...
SKY/WEATHER.............
MAX TEMPERATURE.........
        24 HR TREND.....(optional)
MIN HUMIDITY............
        24 HR TREND.....(optional)
WIND (definition).......(include definition of wind, e.g. 20-ft/10-min avg,
                         slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, CWR, Haines
                         Index, etc.)

(forecast for next geographical descriptor and fire weather zone group)
```

```
=
$$

.FORECAST DAYS 3 THROUGH 5...(winds must be included days 3-5; other elements
per locally-established policy)
.DAY 3...(days can be combined, e.g., .FRIDAY THROUGH SUNDAY)
.DAY 4...
.DAY 5...

.OUTLOOK FOR DAY MONTH DATE THROUGH DAY MONTH DATE (per locally-established
policy: example, days 6-14, 30 and 90 day outlooks when issued)

=
$$
```

NAME (optional)

APPENDIX B – NWS FORECAST EXAMPLES

2. NWS Spot Forecast

THE FOLLOWING IS AN EXAMPLE ONLY:

```
FNUS76 KHNX DDHHMM
FWSHNX

SPOT FORECAST FOR (NAME) BURN......USFS
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY
830 AM PDT MON NOV 4 2003

DISCUSSION...A LOW PRESSURE SYSTEM NEAR THE CALIFORNIA-NEVADA BORDER WILL MOVE
SLOWLY INTO SOUTHERN NEVADA MONDAY AFTERNOON. ALTHOUGH THIS WILL ALLOW SOME
DRYING TO OCCUR OVER THE BURN…THE AIRMASS WILL REMAIN UNSTABLE THROUGH THE DAY
WITH ENOUGH MOISTURE LINGERING TO PRODUCE PARTLY CLOUDY SKIES. WIND WILL ALSO
REMAIN LIGHT THROUGH THE DAY BUT FAVOR AN EASTERLY DIRECTION AS THE LOW
DEPARTS.

FOR PLANNED IGNITION TIME OF 1100 PST 11/4/03
   SKY/WEATHER........PARTLY CLOUDY
   TEMPERATURE........40-45 AT IGNITION TIME…RISING TO A MAX OF 52-56.
   RELATIVE HUMIDITY..60-70% AT IGNITION TIME…LOWERING TO A MIN 53-58%
   WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH AT IGNITION TIME. WINDS WILL
REMAIN LIGHT AND VARIABLE THROUGHOUT THE DAY.
   WIND (RIDGE LVL)...NORTHEAST TO EAST 4-8 MPH.
   OPTIONAL ELEMENTS..(PER REQUEST)

FOR MONDAY NIGHT
   SKY/WEATHER........PARTLY CLOUDY EARLY…BECOMING CLEAR OVERNIGHT.
   TEMPERATURE........MIN 34-38
   RELATIVE HUMIDITY..MAX 90-100%
   WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH. WINDS WILL FAVOR A LIGHT EAST
DIRECTION IN THE EARLY EVENING.
   WIND (RIDGE LVL)...EAST 4-8 MPH IN THE EVENING…BECOMING VARIABLE LESS THAN
   5 MPH OVERNIGHT.
   OPTIONAL ELEMENTS..(PER REQUEST)

OUTLOOK FOR TUESDAY
   SKY/WEATHER........MOSTLY SUNNY.
   TEMPERATURE........MAX 58-63
   RELATIVE HUMIDITY..MIN 45-50%
   WIND (20-FOOT).....BECOMING UPSLOPE TO UPCANYON 4-6 MPH BY NOON WITH BRIEF
GUSTS TO 10 MPH IN THE AFTERNOON.
   WIND (RIDGE LVL)...NORTHEAST 5-10 MPH IN THE MORNING…BECOMING SOUTHWEST
   10-15 MPH IN THE AFTERNOON.
   OPTIONAL ELEMENTS..(PER REQUEST)
```

APPENDIX B – NWS FORECAST EXAMPLES

3. NWS Red Flag Warning / Fire Weather Watch

THE FOLLOWING IS AN EXAMPLE ONLY:

```
WWUS86 KHNX DDHHMM
RFWHNX

FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY – HANFORD CA
1010 AM PDT TUE JUL 2 2003

CAZ296-297-030200-

...FIRE WEATHER WATCH FOR SCATTERED DRY THUNDERSTORMS FOR THE SOUTHERN SIERRA
NEVADA FROM YOSEMITE SOUTHWARD THROUGH SEQUOIA NATIONAL FOREST THIS AFTERNOON
THROUGH 7PM TONIGHT...

FIRE WEATHER ZONES AFFECTED:
ZONE 296 (SIERRA NEVADA FROM YOSEMITE TO KINGS CANYON NATIONAL PARK)
ZONE 297 (TULARE COUNTY MOUNTAINS)

DISCUSSION: SOUTH TO SOUTHEAST FLOW ALOFT WILL ALLOW MONSOONAL MOISTURE TO
BEGIN WORKING ITS WAY INTO THE SOUTHERN SIERRA NEVADA TODAY. THIS MOISTURE
ALONG WITH INCREASED INSTABILITY WILL RESULT IN SCATTERED THUNDERSTORMS OVER
THE SIERRA THIS AFTERNOON AND EARLY EVENING…MAINLY OVER THE HIGHER ELEVATIONS.
HOWEVER…THE LOWER LEVELS OF THE ATMOSPHERE REMAIN DRY AND SOME OF THE
THUNDERSTORMS MAY CONTAIN LITTLE OR NO RAIN.  THUS A FIRE WEATHER WATCH HAS
BEEN ISSUED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS
FIRE WEATHER WATCH.
```

APPENDIX B – NWS FORECAST EXAMPLES

4. NFDRS

a. **ZONE/FCST** Shows whether this forecast is 24-hour trend (ZONE) or specific forecast values (FCST). Trend forecasts can apply to either NFDRS zones or individual stations. Specific point forecast values apply only to individual NFDRS stations and are done where only a few observations are available.

b. **YYMMDD** Year, month, and day valid forecast time.

c. **NO** NFDRS Zone Number (or individual NFDRS station number)

d. **13** Always 1300 LST

e. **WX** Weather valid at 1300 LST tomorrow. Valid entries are:

0 clear
1 scattered clouds (1/8 to 4/8)
2 broken clouds (5/8 to 7/8)
3 overcast clouds (more than 7/8)
4 foggy
5 drizzle
6 raining
7 snowing or sleeting
8 showers (in sight or at the station)
9 thunderstorm
(Categories 5, 6, or 7 sets NFDRS index to 0)

f. **TEMP** Temperature in deg F valid at 13 LST (or temperature trend + or -)

g. **RH** Relative humidity in percent valid at 13 LST (or RH trend + or -)

h. **LAL1** Lightning Activity Level 1400 LST to 2300 LST

i. **LAL2** Lightning Activity Level 2300 LST to 2300 LST

j. **WIND** Wind speed in mph valid at 13 LST (or wind speed trend + or -, 20 ft level/10 min avg)

k. **10HR** 10-hour time lag fuel moisture in percent valid at 13 LST (or trend + or -)

l. **Tx** Max temperature from 1300 LST to 1300 LST tomorrow

m. **Tn** Min temperature from 1300 LST to 1300 LST tomorrow

n. **RHx** Max relative humidity from1300 LST to 1300 LST tomorrow

o. **RHn** Min relative humidity from 1300 LST to 1300 LST tomorrow

p. **PD1** Precipitation duration in hours 1300 LST to 0500 LST

q. **PD2** Precipitation duration in hours 0500 LST to 1300 LST

r. **WETFLAG** Y or N. Indicates whether liquid water will be on the fuels at 13 LST. (Use with caution - a "Y" will set all the NFDRS indices to zero!)

The NFDRS Forecast will follow the comma delimited format as shown:

ZONE/FCST,NO,YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn, PD1, PD2,WETFLAG

An example of the product, formatted for transmission into AWIPS, is displayed below:

FNUS85 KBOI DDHHMM
FWMBOI

ZONE,403,011027,13,1,-3,0,1,1,0,0,,,,,0,0,N **Zone trend**
ZONE,404,011027,13,0,3,0,1,1,0,0,,,,,0,0,N **Zone trend**
ZONE,102708, 011027,13,0,4,-5,1,1,,,,,0,0,N **Station trend**
FCST,102709,011027,13,0,84,15,1,1,12,5,87,60,50,12,0,0,N **Station specific**

Note: Tx, Tn, RHx, and RHn are not necessary in zone or station trend forecasts.

APPENDIX C – PREDICTIVE SERVICES PRODUCT EXAMPLES

1. Daily FWC Product

NORTHERN CALIFORNIA FIRE WEATHER DISCUSSION AND FIRE DANGER FORECAST
0930 PDT TUESDAY MAY 6, 2003
REDDING FIRE WEATHER CENTER

***** THIS WEATHER PRODUCT CONSOLIDATES THE FIRE WEATHER FORECASTS OF THE NATIONAL WEATHER SERVICE (NWS) INTO A GEOGRAPHIC AREA PRODUCT. SIGNIFICANT DISCREPANCIES ARE COORDINATED WITH THE NWS. *****

CURRENT NATIONAL WEATHER SERVICE FIRE WEATHER WATCHES/ RED FLAG WARNINGS: Click here

Discussion: Clouds are increasing across the area a low pressure trough nears the central California coast. This system will bring isolated light showers to the southern sections of the area with only a slight chance north. A colder stronger system is due in by Thursday, with more rain, and unseasonably low snow levels of 3500 to 4000 feet. This system will be out of the area by late Saturday. Another weak system will brush the far north end of the state Monday.

HAINES Index	**LOW**	**MID**	**HIGH**
Medford	3	3	2
Oakland	4	5	5
Reno	N/A	M	2

Confidence factors are defined as follows: **5**- 90-100%...**4**-80-89%…**3**-70-79%…**2**-60-69% …**1**-50-59%

North Coast PSAFDRAs 100 and 105

TODAY: Confidence Factor….4

Weather: Cloudy with isolated light showers mainly south. Showers will end tonight.
Max Temps: 50s and 60s.
Humidity: Minimums 35 to 45% which will occur this morning.
Winds:
Valleys and lower slopes: West to northwest 3 to 6 mph.
Upper slopes and ridges: West to northwest 4 to 11 mph.
LAL: 1
FIRE DANGER: Available during fire season.

WEDNESDAY AND THURSDAY: Confidence Factor… 5

Weather: Increasing clouds late Wednesday with rain Thursday. Snow level 3500 to 4500 feet.
Max Temps:. 50s and 60s Wednesday. Cooling Thursday, with the higher elevations in the 40s and lower elevations in the 50s to lower 60s.
Humidity: Minimums 33 to 46% Wednesday and above 50% Thursday.
Winds:

Valleys and lower slopes: South to southwest increasing to 6 to 12 mph Wednesday afternoon, shifting to northwest to north 7 to 15 mph Thursday afternoon.

Upper slopes and ridges: South to southwest increasing to 12 to 18 mph gusts 24 mph Wednesday afternoon shifting to northwest to north 14 to 24 mph gusts 30 mph Thursday afternoon.

LAL: 1
FIRE DANGER: Available during fire season.

Mid Coast PSAFDRAs 140, 150, 154, 162, 175, 180, and 185:

Bay Area PSAFDRAs 185, 190, 490, 518, 520, 530, 540, and 553:

Northwestern Mtns PSAFDRAs 110, 112, 113, 115, 120, 130, 165, 200, 202, 204, 208, 230, 238, 240, 241, and 243:

Sacramento Valley and Surrounding Foothills PSAFDRAs 170, 177, 245, 246, 247, 270, 280, 300, and 305:

Northeastern California PSAFDRAs 210, 214, 216, 220, 249, 255, and 258:

Northern Sierras PSAFDRAs 244, 248, 250, 262, 282, 285, 290, 293, 330, 335, 340, 345, and 350:

Eastside PSAFDRAs 260, 265, 268, 295, 380, and 383:

TODAY: Confidence Factor….4

Weather: Cloudy.
Max Temps: 50s and lower 60s.
Humidity: Minimums 30 to 40%.
Winds:

Valleys and lower slopes: Southwest to northwest 4 to 8 mph

Upper slopes and ridges: Southwest to northwest 6 to 12 mph.

LAL: 1
FIRE DANGER: Available during fire season.

WEDNESDAY AND THURSDAY: Confidence Factor… 5

Weather: Increasing clouds late Wednesday with rain Thursday. Snow level 3500 to 4500 feet.
Max Temps: 50s and lower 60s Wednesday cooling to the 40s Thursday.
Humidity: Minimums 22 to 33% Wednesday and above 50% Thursday.
Winds:

Valleys and lower slopes: Southeast to southwest increasing to 6 to 14 mph Wednesday afternoon shifting to northwest to north 7 to 15 mph Thursday afternoon.

Upper slopes and ridges: South to southwest 14 to 22 mph gusts 26 to 30 mph Wednesday afternoon, shifting to northwest 10 to 18 mph gusts 24 mph Thursday afternoon.
LAL: 1
FIRE DANGER: Available during fire season.

FRIDAY, SATURDAY, and SUNDAY for all PSAs: Confidence Factor… 3

Weather: Showers Friday over the entire area. Scattered showers Saturday over the northern mountains and along and east of the Sierra Cascade Crest. Partly cloudy Sunday.
Max Temps: Continued below normal.
Humidity: Minimums above 50%
Winds: West to northwest 8 to 15 mph with higher gusts over the ridges.
LAL: 1

7-10 day outlook (May 12, 2003 through May 15, 2003): Confidence Factor…3

Partly cloudy at times in the north, otherwise mostly fair and a little warmer.

Days 10 through 30 (Rest of May 2003): Temperatures and precipitation near normal.

Days 30 through 90 (June and July 2003): Temperatures above normal and precipitation near to slightly above normal

End…Fontana

Southern California Interagency Fire Weather Center
Predictive Services Branch
Geographical Area Coordination Center for Southern California
Riverside, California

Issued: Tuesday, May 6, 2003

VALID FOR: Wednesday, May 7 through Tuesday, May 13

A Brief Look at Weather Conditions over the past 7-Days (April 30- May 6) for southern and central California:

A winter-like weather pattern continued over the State with periods of rain over the northern areas. A significant storm affected much of the southern areas this past weekend. Above normal precipitation occurred over most of the area, except for some of the desert areas. This shows up quite nicely on the past 7 day precipitation for the West chart. The maximum temperature anomalies chart shows that temperatures for the week averaged below to well below normal over the entire area throughout the period.

FORECAST HIGHLIGHTS:

COOL AND UNSETTLED EARLY IN THE PERIOD, THEN WARMER AND DRIER TOWARD THE LATER PART OF THE PERIOD.

SYNOPTIC DISCUSSION FOR ALL AREAS:
The large scale upper trough remains over the Pacific Coast states with a southwest to west flow aloft. At the surface, rather strong onshore flow conditions prevail. Another in a series of very cold upper level low pressure systems will be affecting the entire area early in the period. A weaker upper trough may affect the northern areas late in the period.

**********************EASTERN SIERRA MOUNTAINS AND VALLEYS PSA****************
FDRA's: 460 AND 461. Inyo and Mono County, Inyo NF, Toiyabe NF thru Alpine County, CDF San Bernardino Unit

DAY	FIRE DANGER	WEATHER	TEMPS	HUMIDITY	WINDS
WED	N/A	Partly cloudy. Chance of showers. Snow level around 7,000 feet.	Below normal	Above normal	Gusty southwest to west winds
THU	N/A	Partly cloudy. Chance of showers. Snow level around 5,000 feet.	Below normal	Above normal	Gusty southwest to west winds
FRI	N/A	Periods of snow over the mountains. A few valley rain or snow showers.	Below normal	Above normal	Gusty west to northwest winds
SAT	N/A	Partly cloudy.	Below normal	Above normal	None
SUN	N/A	Mostly sunny.	Below normal	Near normal	None
MON	N/A	Mostly sunny	Near normal	Near normal	None
TUE	N/A	Cloudy with a c hance of showers	A little below normal	A little above normal	Gusty southwest to west winds

**********CENTRAL SIERRA PSA**********
FDRA's: 360, 370, 427, 428 AND 450. Stanislaus NF, Sierra NF and Yosemite NP

**********SOUTHERN SIERRA PSA**********
FDRA's: 435, 443, 440, 445, 448, AND 485. Sequoia NF, Kings Canyon NP and Sequoia NP

**********SIERRA FOOTHILLS PSA**********
FDRA's: 320, 345, 348, 400, 410, 411, 420 and 424. Tuolumne-Calaveras Unit, Madera-Mariposa-Merced Unit, Fresno Unit and Tulare Unit

**********CENTRAL COAST MOUNTAINS AND VALLEYS PSA**********
FDRA's: 490, 495, 497, 510, 525, 558, 560, 565, 575, 580, 582, 585, 586, 588, 590 and 598. Northern Los Padres NF, San Benito-Monterey Unit and San Luis Obispo

**********CENTRAL COAST PSA**********
FDRA's: 505, 507, 508, 512 AND 550. San Benito-Monterey Unit and San Luis Obispo Unit

**********SOUTHERN CALIFORNIA CENTRAL MOUNTAINS PSA**********
FDRA's: 651, 652, 655, 656, 660, 690, 691 and 694. Southern Los Padres NF, Angeles NF and San Bernardino NF

**********SOUTHERN CALIFORNIA COAST AND VALLEYS PSA**********
FDRA's: 514, 600, 605, 606, 608, 610, 620, 622, 623, 624 and 630. Santa Barbara Co, Ventura Co, Los Angeles Co, Orange Co, San Bernardino Unit, Riverside Unit, San Diego Unit, Channel Islands NP

**********SOUTHERN CALIFORNIA SOUTHERN MOUNTAINS PSA**********
FDRA's: 625, 640, 670, 673, 675, 680 AND 685. Cleveland NF

**********SOUTHERN CALIFORNIA DESERTS PSA**********
FDRA: 666. BLM California Desert District, including the Mojave National Preserve and Joshua Tree NP

DAY	*FIRE DANGER*	*WEATHER*	*TEMPS*	*HUMIDITY*	*WINDS*
WED	N/A	Mostly sunny, but with some areas of clouds.	Below normal	Above normal	Areas of gusty southwest to west winds
THU	N/A	Mostly sunny, but with some areas of clouds.	Below normal	Above normal	Areas of gusty southwes t to west winds
FRI	N/A	Mostly sunny.	Below normal	Above normal	Areas of gusty southwest to west winds
SAT	N/A	Sunny.	Near normal	Near normal	None
SUN	N/A	Sunny.	Near normal	Near normal	None
MON	N/A	Sunny.	A little above normal	Near normal	None
TUE	N/A	Sunny.	A little above normal	Near normal	None

****

From the INTEL Section of USFS Region 5:

Latest ERC's

Latest 1000-Hour Dead Fuel Moisture

Latest 100-Hour Dead Fuel Moisture

Latest Burning Index (BI's)

Los Angeles County Live Fuel Measurements (average for all areas)

USFS Region 5 INTEL Section

APPENDIX C – PREDICTIVE SERVICES PRODUCT EXAMPLES

3. Monthly FWC Product

MONTHLY FIRE WEATHER / FIRE DANGER OUTLOOK

May 2003

1. REPORTING UNIT: Northern California Geographic Area

2. DATE: April 28, 2003

3. POTENTIAL FOR SERIOUS/CRITICAL FIRE PROBLEMS

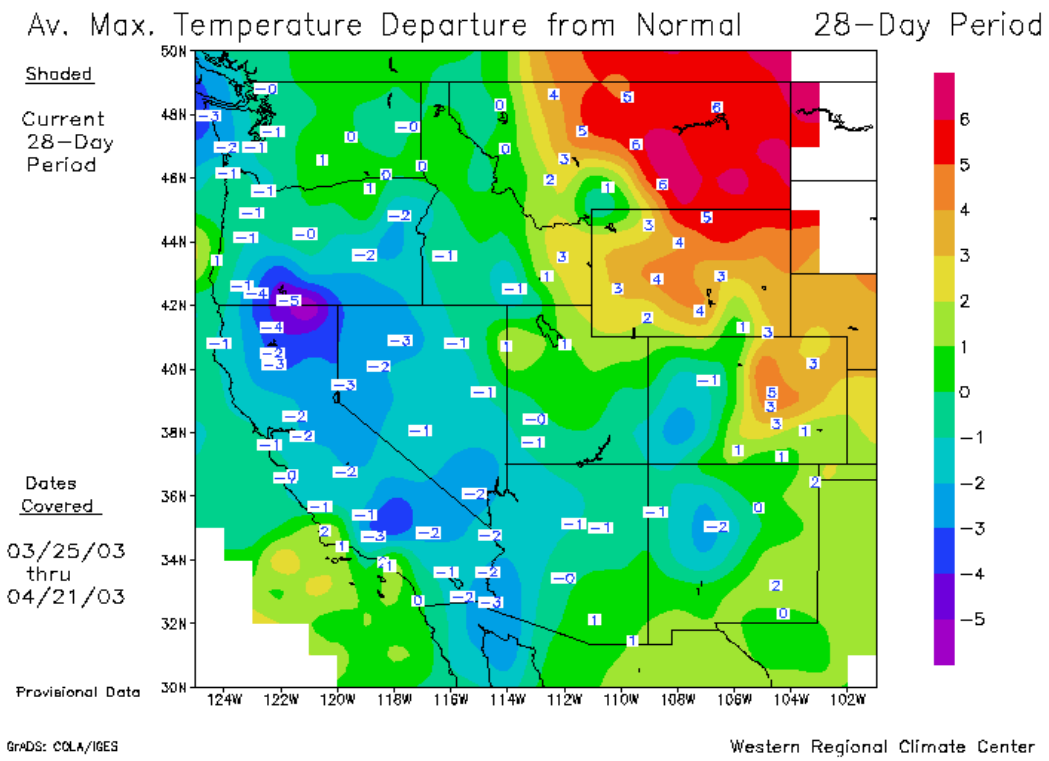
THIS COMING MONTH	BELOW NORMAL		NORMAL	X	ABOVE NORMAL	
THIS SEASON	BELOW NORMAL		NORMAL	X	ABOVE NORMAL	

4. RECENT WEATHER:

The El Nino that peaked at borderline-moderate strength two to three months ago has faded fast, and now has little, if any, influence on California weather. For northern CA, April was dominated more often by a large-scale low pressure trough than by high pressure. Storms tended to move across the mid-Pacific at high latitudes, and then turn southeast toward Oregon/California. Many of them split into two or more parts as they approached the West coast. Figure 1 shows how recent northern CA temperatures compare to normal, under the influence of the low pressure trough. Figure 2 shows, in a broad-brushed manner, the percent-of-normal precipitation during the 6 months from October 2002 through March 2003. The situation in central and far NE California improved further during April.

The mid to high elevation snowpack increased during April, due to 100-175% of normal precip (in general), coincident with unseasonably low snow levels. Several of the April weather systems pro-duced lightning, much of it over or near the Sacramento Valley and surrounding foothills. All of the lightning occurred with precipitation, which is typical for April. Winds in April (through the 23rd) were mostly light to moderate, except for one day of fairly strong South to SW winds ahead of a low pressure trough. The lack of any persistent high pressure ridge to the west or north of the Geographic Area kept North to NE (foehn type) winds to a minimum in April.

Figure 1 MAX TEMPS Departure-from-Normal for Mar 25 to April 21:



FORECAST FOR MAY 2003:

From the perspective of the typical duration of large-scale ridge and trough features, it is fairly likely that northern CA will see a significant shift in the governing weather pattern during early or mid-May. If this probable shift back to increased domination by a ridge occurs, we will see significant warming trend, along with much drier conditions. The frequency and duration of north to NE winds will also increase, if this change occurs.

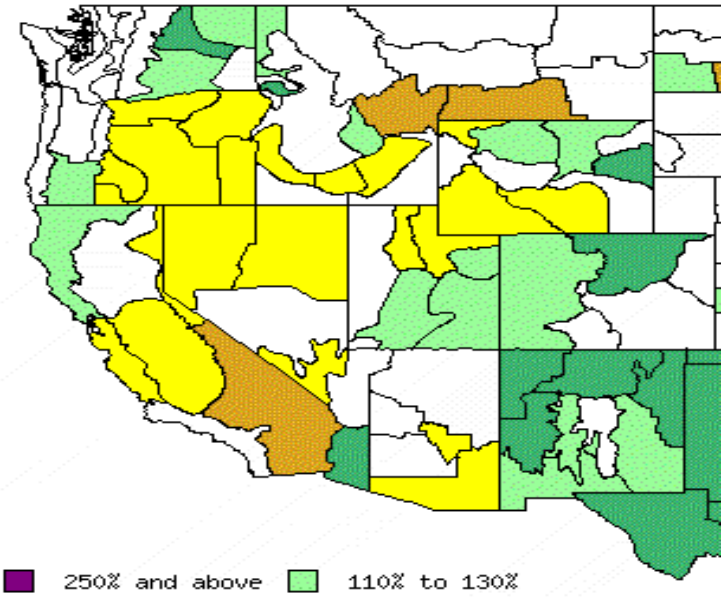
The following is the May weather assessment for northern CA. It is considered the most-likely scenario, and given a 60-70% probability of verifying correctly (in a broad scale sense, based on the above large-scale considerations):

Temperatures: Rising from below normal early in the month to at or above normal for the rest of May. Overall expected North Ops average temps: A little above normal.

Precipitation: Below to just-below normal across the Northern CA Geographic region. The majority of whatever precipitation does occur should be concentrated in the first third of the month.

Winds: Less occurrence of South to SW wind and more occurrence of North to NE wind beginning in the May 5-15 time frame.
*** If the above forecast doesn't work out, it is expected that status quo (April pattern) is the next most-likely scenario (30-40% probability). In that pattern, May would likely remain a bit cooler than normal, with precipitation near slightly above normal. To see latest NWS 30 & 90-day forecasts: http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif.

FIG. 2 Percent of Normal Precipitation Received from October 2002 through March 2003



5. FUELS

FINE - GRASS STAGE	GREEN	X	CURED			
NEW GROWTH	SPARSE		NORMAL	X	ABOVE NORMAL	

LIVE FUEL MOISTURE (sage, deciduous, conifer): 62%

1000-HOUR DEAD FUEL MOISTURE: 27%

NORMAL/AVERAGE FUEL MOISTURE 22%

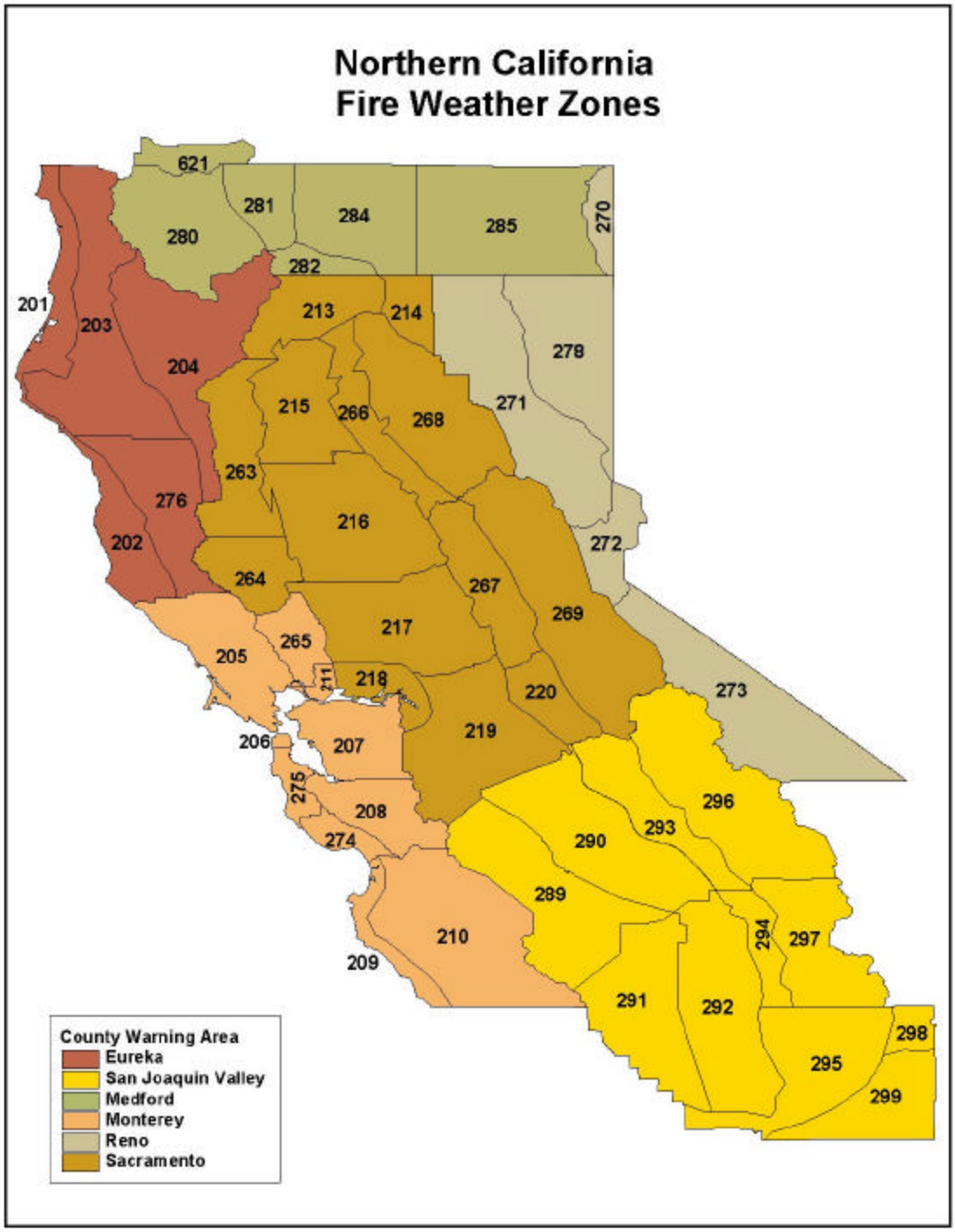
6. AVERAGE FIRE OCCURRENCE/ACRES BURNED (to date 5-yr average): NA

7. ACTUAL OCCURRENCE/ACRES BURNED (to date this year): Fires Acres
110 2241

8. WRITTEN SUMMARY: Potential: Normal. The outlook for May calls for a significant shift in the governing weather pattern by mid May. When this occurs we will see a significant warming trend along with much drier conditions. Fire danger could reach high levels by the end of the month.

APPENDIX D – NWS FIRE WEATHER ZONE MAPS

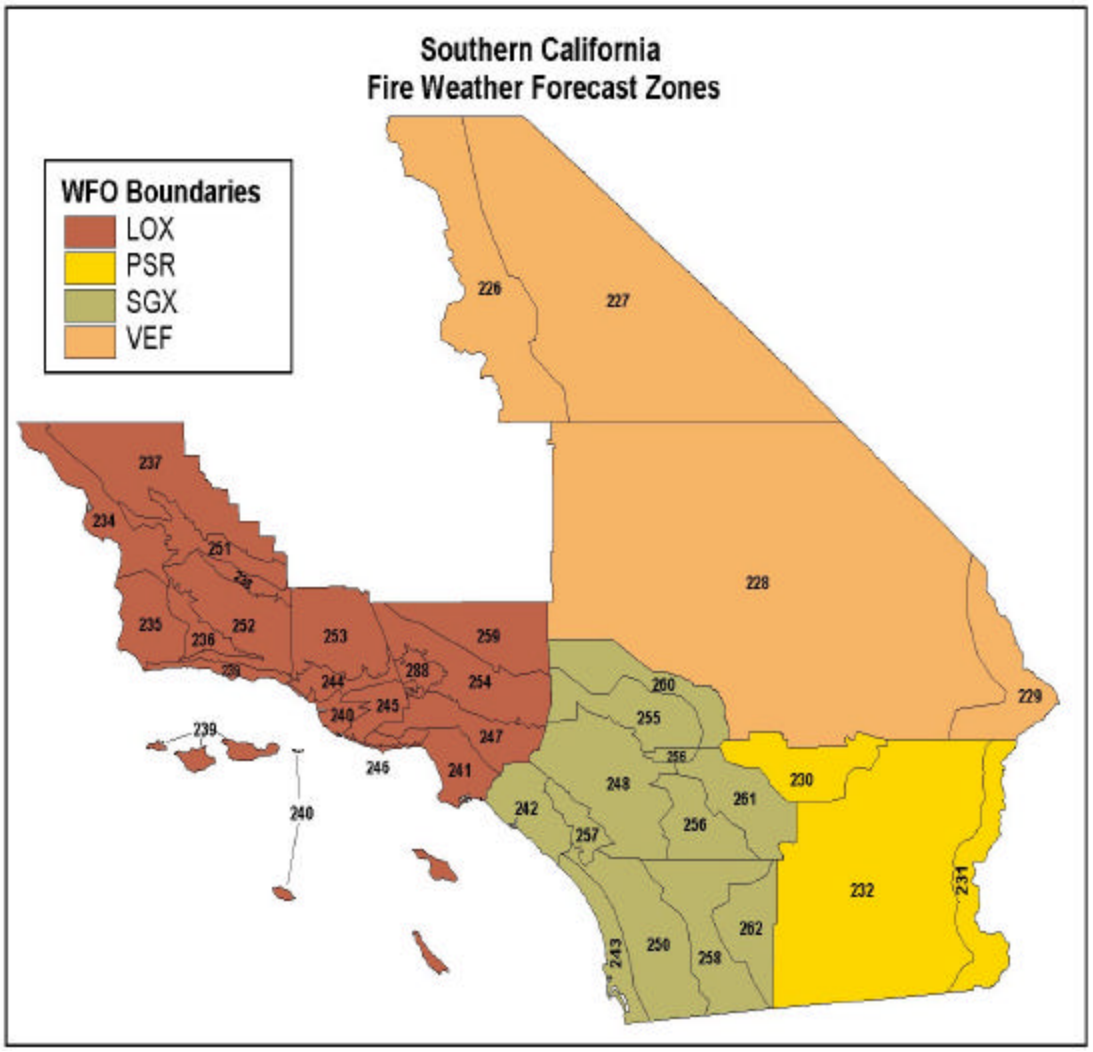
1. Northern California



APPENDIX D – NWS FIRE WEATHER ZONE MAPS

2. Southern California

LOX – Los Angeles/Oxnard, PSR – Phoenix, SGX – San Diego, VEF – Las Vegas



APPENDIX E – FWC/ NWS COORDINATION CALLS

Fire Weather Center and National Weather Service Coordination Calls

- Coordination conference calls will be conducted between the Fire Weather Centers (FWCs) and the National Weather Service (NWS) Weather Forecast Offices (WFOs) during fire season. The purpose of the call is to produce seamless products between WFOs and also between the FWC and WFOs. Calls should be brief and to the point.

- Calls will be at 0830 PDT and will start on June 2, 2003.

- The Fire Weather Center meteorologist will facilitate the call.

- Normally, there will be two calls. One will be for the north and the other for the south. There are 3 WFOs that have forecast areas in both the north and the south. Routinely, Monterey will be on the south call, and Reno and Sacramento will be on the north call. In some instances, one statewide call will be conducted.

- Deployed IMETs should be included in the calls.

- The FWCs will place an unpublished message on their Internet web page by 0820 PDT to inform the WFOs if a call is necessary, and which WFOs need to be on it. It would be desirable to have a self-refreshing web page.

- The main focus of the calls will be in the shorter term time periods.

- Calls will be conducted when one or more of the following is occurring:
    - Fire weather Watch/ Red Flag Warning is in effect.
    - A critical fire weather pattern is expected to develop.
    - Large wildfires or wildfires with IMETs deployed
    - California is in Planning Level IV or V.
    - The FWCs forecasts do not agree with the WFOs forecasts, or there is a conflict between adjoining WFO forecasts. The FWCs will use the NWS IFPS "trigger points" for guidance. (However, coordination may be appropriate at lower thresholds.)

MaxT/MinT	5.0? except 7.0? in complex terrain
RH	5.0% except 10.0% in complex terrain
Prob. Of Precip	20%
Wind Speed (2 min)	12 MPH except 18 MPH in complex terrain
Wind Direction	45? except 60? in complex terrain.
LAL	2 except for a valid discrepancy between wet and dry thunderstorms.
Haines Index	2 except for 3 in complex terrain.

APPENDIX F – BACKUP SPOT FORECAST REQUEST FORM (WS FORM D-1)

WS FORM D-1
(12-86)
Pres. By WSOM D-41

FIRE WEATHER SPECIAL FORECAST REQUEST
(See reverse for instructions)

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL WEATHER SERVICE

I. REQUESTING AGENCY WILL FURNISH:

1. NAME OF FIRE OR OTHER PROJECT	2. CONTROL AGENCY	3. REQUEST MADE	
		TIME †	DATE

4. LOCATION *(By 1/4 Sec - Sec - Twp - Range)*	5. DRAINAGE NAME	6. EXPOSURE *(NE, E, SE, etc.)*

7. SIZE OF PROJECT *(Acres)**	8. ELEVATION*		9. FUEL TYPE	10. PROJECT ON:
	TOP	BOTTOM		☐ GROUND ☐ CROWNING

11. WEATHER CONDITIONS AT PROJECT OR FROM NEARBY STATIONS *(See example on reverse)*

PLACE	ELE-VATION	OB TIME †	WIND DIR.-VEL.		TEMP		‡*(Lu Blank)*		REMARKS *(Indicate rain, thunderstorms, etc. Also wind conditions and 10ths of cloud cover.)*
			20 FT.	EYE LEVEL	DRY	WET	RH	DP	

12. SEND FORECAST TO:	PLACE	VIA	ATTN: *(Name, if applicable)*

II - FIRE WEATHER FORECASTER WILL FURNISH:

13. FORECAST AND OUTLOOK:
(Specify Wind - 20 foot or Eye Level)

TIME † AND DATE: _____

NAME OF FIRE WEATHER FORECASTER	FIRE WEATHER OFFICE

III - REQUESTING AGENCY WILL COMPLETE UPON RECEIPT OF FORECAST

IV - FORECAST RECEIVED:	TIME †	DATE	NAME

Explanation of Symbols

† Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015
* For concentrations (as groups of lightning fires) specify "concentration"; then give number of fires and size of largest. If concentrations are in more than one drainage, request special forecast for each drainage.
‡ No entry necessary. To be completed by the Fire Weather Forecaster.

WS FORM D-1 SUPERSEDES PREVIOUS EDITIONS